BRITISH COLUMBIA

Submission to Minister's Advisory Panel on Contaminated Sites

Prepared by

Contaminated Sites Program Staff

Ministry of Water,
Land and Air Protection

July 25, 2002

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BRITISH COLUMBIA

July 25, 2002

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Suite 400, 601 West Broadway
Vancouver, BC
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BY:

Attention: Margaret Eriksson, Chair

Dear Ms. Eriksson:

Re: Request for submissions from stakeholders on Part 4 of the *Waste Management Act* and Contaminated Sites Regulation

I am pleased to provide this written submission in response to the Panel's June 4, 2002 request for comments. This submission is the result of a collaborative effort led by Lower Mainland regional staff with participation from Contaminated Sites Program staff throughout the province. Appended to our submission are comments from Ministry of Attorney General staff.

Thank you for providing the opportunity to meet with the Panel on July 19, 2002. Please do not hesitate to request clarification or further discussion in follow up to our presentation or this submission.

Yours truly,

Alan W. McCammon, M.Sc., P.Geo.
Head, Contaminated Sites Section
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PREFACE

This submission is the result of a collaborative effort led by the Lower Mainland Regional office with participation from Contaminated Sites Program staff throughout the province.

British Columbia's contaminated sites legislation was originally developed, and has continued to be developed, in direct response to the needs of a wide variety of stakeholders including property owners, local governments, industry, developers, lenders and the general public. The legislation is based on the "polluter pays" principle.

In many ways, the legislation has been successful in meeting the needs of British Columbians since it's inception in 1997. However, we agree that improvements can and should be made. We therefore welcome the present opportunity to provide this submission.

Our submission is structured according to the six issues identified in the "Purpose" section of the Panel's Terms of Reference, as presented in the internet document dated 12 June 2002. Briefs on each of these six issues follow. Each brief provides a background to the issue, discussion of what currently works and considerations for modifying the program. In addition, we have included a separate section on other issues and what is and is not working. Also, comments from Ministry of Attorney General staff are appended.

Issue 1 - Joint and several, absolute and retroactive liability; including a funding mechanism for government liability associated with contaminated sites

BACKGROUND

Liability for clean up of contaminated sites is contentious in many jurisdictions, including British Columbia, with compelling arguments from a number of divergent interests. The provincial government is currently examining the broader issue of civil liability[1] and has begun a consultation process to examine proposals for reform.

In British Columbia, the joint and several, absolute and retroactive liability provisions are based on principles that have been developed and adopted nationally[2] and internationally.

For some stakeholders, the core issue is whether parties with 'deep pockets' but minimal involvement should bear the full cost of clean up or whether the government should contribute to orphan shares of remediation. Some organizations[3] contend that joint and several, absolute and retroactive liability should be removed from the contaminated sites legislative framework.

An assessment of the current joint and several, absolute and retroactive liability provisions of the *WMA* and CSR was provided in the Junger report[4]. The report outlines a number of options for future directions and an assessment of the strengths and weakness of a number of potential options. These have not been repeated herein.

DISCUSSION

Due to the significant resource requirements, the Ministry only identifies liability for remediation where there is a high risk to the environment or human health. In such cases the manager can issue a remediation order under WMA 27.1 to one or more *substantially* responsible persons. Although the manager must consider the degree of involvement when deciding who is substantially responsible, there is no requirement to specifically allocate shares of responsibility. The regulator's mandate is to minimize impact to the environment and human health.[5]

It is important to recognize that the liability principles serve many purposes besides achieving clean up of high risk sites. While retroactive liability is critical to name persons responsible for contamination that occurred decades ago, it ensures that the environmental practices employed today minimize future contamination.

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1 *Civil Liability Review - Consultation Paper*, Ministry of Attorney General, April 2002

2 *Contaminated Site Liability Report, CCME*, March 1993.

3 *Submission on the Contaminated Sites Legislation*, BC Business Council, April 1999

4 Joint and Several Liability for Contaminated Site Remediation- Internal Discussion Document. R. Junger May 2002.

5 *Appeal 98-WAS-01(b)*, Environmental Appeal Board, March 2000 and subsequent *Reasons for Judgement in the Supreme Court of British Columbia*, Tysoe, J., 2000 BCSC 1698

If the principles of joint and several, absolute and retroactive liability are removed from the contaminated sites legislation, there is a real possibility that a) remediation will not occur within an adequate time frame, because one or more responsible persons is absent or unable fund their share b) brownfields will proliferate as developers lose the opportunity to recover costs for remediation that they are willing to initiate c) economic activity on these brownfields will stall d) clean up costs will be passed on to the taxpayers of British Columbia e) legal costs for both public and private sectors will rise. The appeal, cited on the previous page, required five weeks of hearing to debate the manager's identification of responsible persons. If the liability provisions were altered to require the manager to apportion costs, the legal proceedings would likely have lasted much longer and led to further litigation.

A more measured approach to liability reform would be to refine the exemptions currently provided in the Act. For example, additional relief from the principle of retroactive liability might be appropriate for persons who previously cleaned up a site that has been re-defined as contaminated, solely due to a change in standards.

If the government does decide to pursue reform of contaminated sites liability provisions, it should first produce a detailed and accurate estimate of the financial implications to tax payers. This should include both the capital costs of remediation and the significant operating costs at sites where remediation systems are required in perpetuity. The Ministry should also minimize tax payer liabilities by producing a financial security policy for contaminated sites that limits government's exposure when responsible persons are unable or unwilling to honour their commitments toward remediation.

The Ministry should examine alternate funding mechanisms for orphan sites or orphan shares of remediation costs. This is especially important if the government changes the current liability provisions to satisfy the demands of certain sectors of the business community. One option would be to expand the industry stewardship programs that result in a levy at the point of sale for products that can cause environmental impacts if not managed properly. Similar taxes on the petroleum and chemical industries were used to initially finance the U.S. Superfund program.

In cases where the degree of risk does not warrant Ministry intervention, interested parties can seek compensation by requesting an allocation panel or otherwise engage parties through mediation or legal action. The Ministry should promote alternate dispute resolution by imposing limits on timelines, making the outcome binding on parties and subsidizing the cost of these processes to persons who can demonstrate financial hardship.

The general principles of liability set out in WMA 27(4) only allow parties to sue responsible persons for the purposes of cost recovery i.e. after remediation costs have been incurred. This precludes parties who cannot afford to pay for remediation from pursuing actions against responsible persons. An example of this are property owners whose land has been contaminated from an up gradient property and who cannot sell or redevelop their land and who cannot afford to clean up their land. Options for assistance in such cases could include:

- provisions for financial relief through reduced taxes for specified periods designed to allow property owner to recover these costs;
- provisions for parties to have access to guaranteed low interest loans for the remediation of sites;

- having the Crown underwrite the legal costs of affected property owners;
- having the Crown pursue class action suits against responsible parties/companies, where the responsible parties have multiple sites in the province affecting others.

Joint and several liability is fundamentally an issue of public policy The liability provisions of the *WMA* and CSR as applies to contaminated sites have the potential to significantly affect administration of the contaminated site regime and the economic interests of various parties. Any consideration of changes must be based on careful review of relevant principles, detailed consultations with potentially affected parties and in consideration of the future position of the government in respect to this policy.

Further discussion, from staff at the Ministry of Attorney General, is provided in Appendix I.

CONSIDERATIONS

1 Retain the current liability provisions in the *Waste Management Act*

2. Consider refinements to the existing liability exemptions

3. Produce accurate and detailed estimate of tax payer liabilities under both the current legislation and proposed liability reforms

4. Evaluate alternate funding mechanisms that will be applied to industry sectors and not tax payers

5. Provide legal and financial relief for affected parties who cannot afford to remediate their land in order to pursue cost recovery in the courts

Issue 2 - Government's service plan objective to limit direct government administration and oversight to high risk sites and the implications on private sector professional accountability, liability and insurability

BACKGROUND

The current legislation is effective in identifying contaminated sites, ensuring that contaminated sites are properly managed - particularly on redevelopment and making site information publicly available. The current application review system, however, cannot consistently meet the timing needs of some stakeholders. Administration of high risk sites requires significant staff time and resources. This and other required activities limit the ministry's ability to process review applications for non-high risk sites. The current expert roster process has provided some relief in this regard for low-moderate risk sites. Further changes to the program, however, are needed in view of the ministry's Service Plan requirements.

The ministry's Service Plan strategy to limit ministry staff involvement to high risk sites will require changes in the contaminated sites legislation as well as a change in the role of private sector professionals. Key outcomes of the legislation which we feel must be retained, along with a suggested new regulatory framework, are discussed below. Immediate off-loading of non-high risk sites will result in transitional issues which are also discussed. Liability and insurability implications of the change in the role of private sector professionals are based on information provided in the report by Godsoe & Sandgathe[6].

DISCUSSION

Critical outcomes

Important outcomes of the current legislation and ones that are critical to allow the ministry to achieve it's goal to "protect human health and safety by ensuring clean and safe water, land and air"[7] are the ability to require remediation of:

- high risk sites;
- all contaminated sites on change in land use; and
- all contaminated sites on decommissioning[8].

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6 *"Contaminated Sites Administration in British Columbia: Report to B.C. Ministry of Water, Land and Air Protection"*. Craig Godsoe & Tracey Sandgathe, Borden Ladner Gervais LLP. 16 May 2002.

7 From page 7 in "MWLAP Service Plan, 2002/2003 – 2004/2005"

8 Permanent or long-term suspension of CSR Schedule 2 type operations.

New regulatory framework

These critical outcomes could be accommodated within the ministry's service plan strategy to limit direct government administration to high risk contaminated sites. The regulatory framework would need to include provisions requiring:

1. site investigation, prior to a change in land use or upon site decommissioning, for all sites where potentially contaminating activities occurred (e.g. CSR Schedule 2 activities);
2. evaluation of site risk, based on a prescribed risk ranking formula;
3. reliance on the opinion of private sector qualified professionals for non-high risk sites. WMA instruments (e.g. determination, AIP, certificate) would not be offered or required for non-high risk sites;
4. administration of high risk sites by ministry staff;
5. mechanisms to bring contaminated sites to the ministry's attention and provide stakeholders with access to site information;
6. controls on soil relocation; and
7. ministry compliance assessment and enforcement capability.

The regulatory framework also needs to maintain the flexibility to accommodate exceptions.

Required "tools"

The above provisions and the "tools" needed to implement such a change in the regulatory structure are discussed below. In this context, it is important that the definition of "contaminated site" be consistent with the existing legislation, whereby the contaminated site includes the entire contaminated area, irrespective of property boundaries. This provision is necessary to uphold the polluter pay principle[9].

1. A "trigger" mechanism is needed to ensure that **all** contaminated sites are appropriately managed on change in land use, that decommissioned contaminated sites (see footnote 8) are not abandoned and to bring high risk sites to the ministry's attention. The site investigation "trigger" would be activated on site decommissioning and on application for municipal permits required for a change in land use and would only apply to sites where CSR Schedule 2 type activities occurred. High risk sites would be administered by the ministry. The opinion of private sector qualified professionals would be relied on for non-high risk sites.

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9 "The principle of "polluter pays" should be paramount in framing contaminated sites remediation policy and legislation" pg. 3 in Contaminated Site Liability Report – Recommended Principles for a Consistent Approach Across Canada. 25 March 1993. CCME (CCME-SPC-CGCSL-67E).

2. A screening tool is needed to distinguish high risk sites from non-high risk sites. The risk ranking formula currently prescribed in Protocol 6[10] is not considered adequate for this purpose. Provisions to identify sites as high risk beyond a simple ranking system are warranted. Results of a source-pathway-receptor analysis could be considered as the basis for a sound, defensible means of determining the risk level at a site. The risk classification system must have the flexibility to adequately classify potential risk at sites with little site–specific information. Risk rankings may change as additional information is collected. Risk evaluation, using a prescribed formula, would be completed by private sector qualified professionals.

   The ministry needs to maintain flexibility to either include sites classified as non-high risk or exclude sites defined as high risk. This is particularly important for sites that rank close to the high risk cut-off or are politically sensitive.

3. On triggering site investigation under 1. above, the opinion of private sector qualified professionals that a site is not contaminated or if contaminated, now complies with WMA requirements, would be relied on to "release" municipal permits required for a change in land use of non-high risk sites. The professional opinion would be provided in a report, with ministry prescribed contents (e.g. PSI, DSI, confirmation of remediation, standardized wording of concluding statements, etc.), but would not be a WMA "instrument" (e.g. not a determination, AIP, certificate). Based on the Godsoe & Sandgathe report, this approach would not materially alter the liability and insurability provisions which private sector professionals currently experience.

4. A WMA "instrument" issued by the ministry would be required prior to a change in land use of high risk contaminated sites. Administration of high risk sites where a change in land use is not proposed, would be similar to the existing approach. For this to be effective, the ministry must retain the existing powers to manage high risk sites, including the authority to issue orders for site investigation, site remediation, pollution abatement and pollution prevention.

5. Currently, the ministry becomes aware of contaminated sites via several mechanisms[11]. To ensure that high risk sites come to the attention of the ministry and ensure that the ministry and stakeholders are aware of activities at non-high risk sites (for the purpose of compliance assessment screening), there needs to be a duty to submit risk evaluations (see item 2 above) in conjunction with certain events, for example:

   a. when site investigation is triggered by proposed change in land use or upon site decommissioning;

   b. on notice of commencement of independent remediation;

   c. on notice of contaminant migration to adjacent land; and

   d. at the ministry's request, on "discovery" of a contamination problem or proactive enquiry of site conditions at sensitive locations.

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10 *Protocol 6 "Independent Remediation for Low to Moderate Risk Sites: Extent manager may rely on statements by qualified professionals"*, dated 19 July 1999.

11 e.g. information from other regulatory authorities, complaints from adjacent land owners or concerned persons, site profile submissions, notices of commencement of independent remediation, voluntary disclosure, inspections, spill reports, etc.

Consistent with the government's move toward web based information dissemination, notice of milestone events, risk evaluations and site reports (e.g. .pdf format) could be uploaded to the Site Registry directly by the private sector qualified professional. This information could then be screen by the ministry for compliance assessment and would also be available to the public and other stakeholders.

6. Current regulatory provisions respecting soil relocation remedied the previous unregulated and *ad hoc* approach to soil management, when there was no consistency in process across municipalities (see *Soil Management Task Force Report*, March 1992). For this reason, retaining the Soil Relocation Agreement (SRA) is desirable. At present, private sector qualified professionals may recommend that the manager sign off on a SRA for a low-moderate risk site. It is suggested that the requirements for and format of the SRA be retained, with private sector qualified professional sign off (rather than manager), regardless of site risk, provided the soil meets applicable numeric standards for the receiving site.
7. Ministry compliance assessment and enforcement capability at all contaminated sites is mandatory to ensure that regulatory requirements are being met and to provide stakeholder confidence that the new system is effective in achieving the ministry's Service Plan goals. These "tools" are discussed further in Issue 5 – Compliance Mechanisms.

Transitional Issues

An immediate change to a new regulatory structure where the ministry no longer administers non-high risk sites raises the following concerns:

- uncertainty on the part of municipalities, the public and ministry that the public interest (i.e. protection of human health and the environment) will be ensured, especially for sites close to but below the high risk class;
- capacity of the private sector to take on the work; and
- willingness of the private sector to accept the work at all non-high risk sites. There is concern that there will be certain types of non-high risk sites which private sector professionals will be reluctant to take on (due to, for example, profit margin issues).

A gradual transition from the current model to one where the ministry only administers high risk sites would serve to create greater stakeholder acceptance in the move to the new system, allow the private sector to build up capacity to take over the necessary functions and allow an opportunity to identify types of sites which would not be well served by the new system.

Transitional Model

A transitional model could include reliance on the opinion of private sector qualified professionals for low risk sites (i.e. a WMA instrument is neither offered nor required), with medium risk sites being managed similarly to the existing Protocol 6 process (i.e. ministry "rubber stamps" WMA instruments and conducts review audits of private sector professionals' submissions) and high risk sites being administered by the ministry.

This approach was discussed with some municipal representatives[12] and in concept accepted with some *provisos*, for example:

- immunity provisions currently in WMA s. 28.6 would need to be expanded to accommodate reliance on the opinion of a private sector qualified professional;
- consultation with municipalities would be needed to develop specifics of the "trigger" mechanism discussed in Item 1. above; and
- a mechanism is needed to ensure that off-site issues can be addressed at non-high risk sites where a change in land use or decommissioning is not proposed.

CONSIDERATIONS

Consider implementing the proposed transitional model while working towards the new regulatory framework described in Items 1 through 7 above. A move to the transition model would necessitate consideration of the following, in consultation with key stakeholders:

1. Development of a risk ranking formula. The formula would need to be able to identify sites as low, moderate and high risk beyond a simple ranking system; should be based on the results of a source-pathway-receptor analysis to form the sound, defensible basis for determining the risk level at a site; must have the flexibility to adequately classify potential risk at sites with little site–specific information; and must be able to accommodate exceptions. (Item 2);
2. Development of the specifics of the "trigger" mechanism (Items 1 and 4);
3. Modification of the legislation to allow reliance on the opinion of a private sector qualified professional for low risk sites (Items 3) along with adjustments to the immunity provisions for municipalities;
4. Modification of the Site Registry to accommodate direct uploading of site information by private sector qualified professionals (Item 5);
5. Modification of the soil relocation provisions to allow sign off by a private sector qualified professional for sites at all risk levels, where soil meets numeric standards at the receiving site (Item 6);
6. Assurance that the legislation includes compliance assessment and enforcement capability for all contaminated sites (see Brief for Issue 5 – Compliance Mechanisms). (Item 7); and
7. A means to monitor effectiveness of the transition model and address problems prior to moving to the new regulatory framework.

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[12] Meeting 10 July 2002 with Doug Roberts (City of Vancouver), Doug Pope (City of North Vancouver), Dipak Dattani (City of Burnaby) and Ken Bennett (District of North Vancouver).

Issue 3 - Funding mechanisms, other than general revenue, to sustain Government's role in contaminated sites administration effective 2004-5

BACKGROUND

The current program funding mechanism is a polluter-pay, fee-for-service system in which proponents who require or request contaminated sites services from the Government (e.g. report reviews, approvals, certificates etc.) pay pre-set user fees assessed using a matrix system. The costs of established services are defined on the basis of site size (small, medium or large), site complexity (simple or complex) and, for some services, the review option selected (internal/ministry review, external review or rostered professional expert review). In some cases the pre-set fees accurately reflect the amount of work required to complete a service request, in other cases they do not. Generated revenues contribute to funding of the Government's Contaminated Sites Program. Program activities also include non-revenue generating activities such as policy and legislation development, enforcement, legal issues, non-fee based site remediation administration (e.g. independent remediation), information management and general administration.

The ministry's Service Plan strategy to limit ministry staff involvement to high risk sites will require changes in the Contaminated Sites Program funding mechanisms. Off-loading of non-high risk sites will result in the loss of associated contaminated sites service fees and a reduction in program funding. It is unlikely that the current funding mechanism would adequately fund the Government's role in high risk sites as well as non-fee related aspects of the program.

Stakeholders have also identified the related issue of Government funding mechanisms for remediation of orphan sites. The current funding mechanism for orphan sites only applies to sites that are declared by the minister to be high risk orphan sites such that it is necessary for the Government to undertake remediation. There are provisions for remediation of declared sites to be conducted under ministry direction using Government funds. Following remediation as necessary to clean up a high risk orphan site or confirm the site is no longer high risk, the ministry may seek recovery of all or a portion of the costs of remediation (costs external to the ministry only i.e. consultant and contractor contracts).

DISCUSSION

<u>Pros of Current Funding Mechanism</u>

Positive aspects of the current funding mechanism are:

- Fees applicable to established contaminated sites services are defined. Stakeholders know the costs of services in advance;
- Administration associated with contaminated site services fee assessments and calculations is limited (i.e. no tracking of staff time (ministry or external staff), no complex invoicing system etc.); and
- Administration associated with contaminated site services related non-payments and collection of debts owed to Government is not required (fees are paid at the time of service request).

Cons of Present Funding Mechanism

Negative aspects of the current funding mechanism are:

- A large portion of the Government's Contaminated Sites Program is not funded by revenues collected for fee-based contaminated sites services;
- Fees are not transparent. Costs of service requests are not directly applicable to the amount of work required. In some cases stakeholders are "overcharged", in other cases stakeholders are "undercharged". Labour intensive service applications are subsidized by simpler service applications; and
- Resubmissions fees are generally low (i.e. clients are "undercharged"). The 20% resubmission surcharge does not meet the objective of deterring stakeholders from submitting incomplete or substandard applications.

Alternative Funding Mechanisms

Alternate funding mechanisms that could be used to generate revenue to fund the Government's Contaminated Sites Program include:

- User fees for Government administration related to contaminated sites (e.g. entry of sites onto the Site Registry, compliance assessments, monitoring of site conditions/risks, review of reports, approval of remediation plans, confirmation of clean ups, public meetings etc.);
- Environmental levies applied to industry sectors that produce, sell or use hazardous chemicals or products (e.g. petroleum and chemical industries); and
- Penalty fines.

With respect to user fees, fee for service systems should be practical, transparent, and accurately reflect the amount of work required. Consideration should be given to a matrix system for routine services applicable to all sites (e.g. entry of sites onto the Site Registry, compliance assessments etc.) and a cost plus system be used for complex services applicable to high risk sites (e.g. monitoring of site conditions/risks, review of reports, approval of remediation plans, confirmation of clean ups, public meetings etc.) Use of a cost plus system for complex high risk site services will ensure that stakeholders pay actual Government costs and encourage timely clean up or management of high risk sites to reduce site risk and Government involvement.

CONSIDERATIONS

1. Evaluate the Contaminated Sites Program to determine which program activities are more amenable to direct fee recovery (e.g. requested services such as report reviews, compliance assessments, information requests etc.) and those which are less amenable (e.g. policy and legislation development, enforcement etc.).

2. Fund fee recoverable activities using fee for service systems that are practical, transparent and accurately reflect the amount of work required.

3. Fund non-fee recoverable activities using alternate funding mechanisms applied to industry sectors (e.g. environmental levies, administrative or non-compliance penalties etc.).

4. Use of a matrix system for routine services applicable to all sites (e.g. entry of sites onto the Site Registry, compliance assessments etc.) and a cost plus system for complex services applicable to high risk sites (e.g. monitoring of site conditions/risks, review of reports, approval of remediation plans, confirmation of clean ups, public meetings etc.).

Issue 4 – Best practices in other jurisdictions

BACKGROUND

The Contaminated Sites Regulation and the associated amendments to the Waste Management Act, implemented through Bill 26, were developed in response to the direct needs of stakeholders in the province of British Columbia. Prior to implementation of this ambitious legislation, the ministry not only consulted extensively with local stakeholders but also carried out a comprehensive review of practices in other jurisdictions. As a result, many best practices in other jurisdictions were adopted by BC.

Since 1997, contaminated sites legislation in BC has evolved and best practices from other jurisdictions have been incorporated (e.g. expanded role of rostered professionals and revised soil and groundwater standards). Other jurisdictions (e.g. Yukon and Manitoba) have also adopted many of the elements of BC's contaminated sites legislation.

DISCUSSION

Recently, MWLAP and environment ministries elsewhere reviewed current contaminated sites legislation and practices in various jurisdictions[13,14,15]. Unfortunately, the cited documents do not evaluate the effectiveness of the various regimes in dealing with contaminated sites here or elsewhere. In order to adequately assess best practices in other jurisdictions that could or should be adopted by BC, the limitations of existing contaminated sites legislation and practises in BC should first be clearly defined. Then a comprehensive review of legislation and practices elsewhere should be conducted, including a survey of stakeholders in those jurisdictions, to determine whether solutions to the limitations of BC's contaminated sites legislation and practices exist in other jurisdictions.

This latter review was not possible as part of this submission due to the broad scope of the topic and limited time available.

We understand that once the Panel has reviewed submissions from stakeholders in BC they will meet with contaminated sites representatives from Oregon, Washington, Alaska and possibly Ontario to assess best practices there and to determine the potential for applicability in BC.

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[13] "Contaminated Sites Administration in British Columbia: Report to B.C. Ministry of Water, Land and Air Protection", prepared by Borden Ladner Gervais LLP, dated May 16, 2002

[14] "Contaminated Sites Jurisdictional Review Summary", prepared by Kris Ord and Greg Tyson, Ministry of Water, Land and Air Protection, Dated May 15, 2002

[15] "Contaminated Sites Management: Review of Legislation", prepared by Griffiths Muecke Associates for the Nova Scotia Department of Environment.

CONSIDERATIONS

Determine whether the drivers that led to the original development of contaminated sites legislation in BC still exist and assess what aspects of legislation and practices in BC continue to meet those needs.

2. If the drivers have changed and/or the needs of stakeholders in BC are not being met, the Panel should consider the merits of carrying out a comprehensive review of the effectiveness of practices in other jurisdictions, including a survey of stakeholders in those jurisdictions. This review would aid the Panel in determining what best practices in other jurisdictions could be incorporated into BC's contaminated sites legislation to address identified limitations.

Issue 5 - Mechanisms that will ensure standards are being met

BACKGROUND

The ministry Service Plan will limit the ministry's role in the administration and management of contaminated sites to those classified as high risk. To meet the stated goal of the Service Plan to "protect human health and safety by ensuring clean and safe water, land and air" , will require the development and implementation of a compliance assessment system to ensure legislative standards are being met at all contaminated sites in BC.

The contaminated sites program has developed a significant body of public information and technical and administrative guidance to assist stakeholders in meeting the standards of the Contaminated Sites Regulation.

DISCUSSION

Key components of a strategy to ensure that standards are met at all contaminated sites, including those not directly administered by the ministry, are discussed below.

Mechanism to identify and classify contaminated sites

Sites with potential for contamination come to the attention of the ministry mainly through the following events:

- proposed change in land use or upon site decommissioning;
- notice of contaminant migration;
  notice of commencement of independent remediation;
- referrals from other government jurisdictions;
- complaints from adjacent landowners or concerned persons.

These notices are an important tool for the identification of contaminated sites and provide a trigger for the subsequent administration and management of the sites. To ensure the ministry is notified of high risk sites and to ensure that the ministry and other stakeholders are aware of activities at non-high risk sites, it is proposed that an evaluation of the site risk, using a ministry prescribed classification system, be completed as part of the submission for these notices[16]. The notices would be directly uploaded to a web-based Site Registry by qualified professionals retained to conduct the investigation and remediation activities at the site.

Mechanism to ensure qualifications of private sector professionals

To meet the ministry Service Plan strategy to limit staff involvement to high risk sites will require greater reliance on private sector professionals to conduct, oversee and report on contamination at sites classified as non-high risk.

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[16] See also Issue 2, MWLAP Submission to Minister's Advisory Panel on Contaminated Sites.

The current contaminated sites program allows for an expedited review service conducted by private sector professional experts appointed by the Director to the Roster of Professional Experts. The roster is administered by the Roster Steering Committee (RSC) and the BC Association of Professional Engineers and Geoscientists (APEGBC). The ministry is represented by at least one member on the RSC. The professional expert is accredited on the basis of a combination of education, active registration with a designated professional association, documented contaminated site experience and successful completion of an examination set by the Roster Steering Committee. Issues respecting the criteria and process used to place individuals on the roster of contaminated site professional experts have recently been addressed in a discussion paper prepared by a subcommittee of the RSC[17]. The discussion paper also highlighted designation or accreditation processes for qualified professionals in other jurisdictions.

The function of the professional expert is to recommend the issuance of legal instruments under the CSR (Certificates of Compliance, Approvals in Principle, Determinations, Contaminated Soil Relocation Agreement) for sites classified as low to moderate risk, based on the satisfactory completion of site investigation and remediation. Currently, the issuance of legal instruments on the recommendation of the professional expert is largely independent of regulator involvement. To ensure that standards are met and a high standard of work is maintained, the ministry performs a comprehensive and detailed audit of the expert's recommendation and related documentation, on a frequency of 1:10 submissions. The audit results will be posted on the ministry website in the near future.

The current roster system has been developed for the purpose of allowing a private sector, expedited option for obtaining legal instruments under the *Waste Management Act*. Several issues respecting the accreditation process for roster experts and liability/insurability provisions[18] would make adopting this system for the designation of "qualified professional" problematic, including:

- The current roster accreditation process is labour intensive for ministry staff (assisting the RSC in the preparation of the exam, marking, etc), and the degree of ministry involvement with the process may compromise the independence of a compliance assessment system for contaminated sites work at non-high risk sites.
- While membership in a BC professional association with a disciplinary board and a code of ethics is mandatory, the current restriction to membership in APEG and BCIA does not reflect the multidisciplinary nature of site investigation and remediation of contaminated sites. A self-governing, professional body should be established specifically for contaminated sites professionals.

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17 Discussion Paper: Qualification Requirements for the Contaminated Sites Professional Roster of Experts. Prepared for the Roster Steering Committee by Reidar Zapf-Gilje (Chair), Katherine O'Leary and Don Burnett. July 17, 2002. Available at http://www.apeg.bc.ca/news/news/CSRSC-Discussion-Paper.pdf

18 Contaminated Sites Administration in British Columbia: Report to the B.C. Ministry of Water, Land and Air Protection. Craig Godsoe & Tracey Sandgathe, Borden Ladner Gervais LLP. 16 May 2002.

Mechanism to determine whether work done by private sector qualified professionals meets requirements

There is concern that private sector objectives (eg, profit maximization) may conflict with public interest objectives if adequate compliance assessment measures are not in place. Development and effective implementation of a compliance assessment system is therefore necessary to monitor the management of non-high risk contaminated sites.

A phased system for compliance assessment is proposed whereby the web based Site Registry information is initially queried to determine compliance with notification requirements. This would be followed by increasingly more complex evaluation of the technical aspects of the contaminated site documentation, as necessary, to ensure that the ministry guidelines, protocols and procedures have been followed and ultimately that the regulatory standards for environmental quality have been met.

When and where the compliance assessments would be conducted could be based on frequency of applications as well as consideration of specific site characteristics such as environmental or human health vulnerability, ecological value, sensitivity of location (eg., unconfined aquifer) and complexity of remedial technology, etc. Risk ranking could also be used as a criteria for a compliance assessment, whereby assessments are conducted on a more frequent basis on sites that are not classified as high risk but are near the cut-off. Response to complaints from municipalities, other agencies or concerned persons could also form the basis for a compliance assessment. An objective of the compliance assessment system should be to ensure that each qualified professional/company is assessed at some point. The ministry should retain the statutory powers to intervene proactively in the management of all contaminated sites.

Compliance assessment practices in other jurisdictions where the regulatory oversight role has been privatized should be reviewed (eg. Massachusetts, Washington State)

Enforcement Capability

Enforcement is a two pronged issue wherein disciplinary action could be taken against the private sector professional for issues related to mismanagement of contaminated site activities and/or penalties could be levied against a site owner/responsible person(s) for non-compliance with the regulations. Penalties for non-compliance or mismanagement need to be severe to serve as a deterrent.

It is not anticipated that the penalty system will differ substantially from the current system in the case of high risk sites due to continued ministry administration. The current penalty system will have to be revised to ensure that non-high risk sites are investigated and remediated to meet the standards of the CSR. Changes to the current a penalty system should be developed in conjunction with other jurisdictions with responsibility for contaminated sites, such as local governments.

To address the timely remediation of decommissioned sites not intended for redevelopment in the near future, it is proposed that an incentive system be developed in conjunction with local governments. Such a system would serve to minimize the creation of brownfield sites.

Legal support from the Ministry of Attorney General and legal investigation services provided by conservation officers should be available for all sites, including those not directly administered by the ministry.

Up to date information on compliance and enforcement activities (eg., number and results of compliance assessments, penalties, etc.) should be provided to stakeholders, including the public, using a web-based system.

CONSIDERATIONS

1. Refine current mechanisms to bring to the attention of the ministry sites that are potentially contaminated. Require the inclusion of site risk classification within the notice system to the Site Registry.

2. Require that investigation and remediation of contaminated sites be conducted by qualified professionals with membership in a professional association of BC and accredited by a process independent of the ministry.

3. Develop a comprehensive, timely and efficient compliance assessment system to ensure that ministry guidelines, protocols and procedures have been followed and ultimately that the regulatory standards for environmental quality have been met.

4. Revise the current penalty system to accommodate non-compliance issues associated with sites not administered by the ministry.

5. Additional resources are required for WLAP and the Ministry of Attorney General to ensure the effective enforcement of the contaminated sites legislation.

Issue 6 - Process for setting standards and whether those standards are fair, consistent and harmonious with other jurisdictions

The Contaminated Sites Regulation (CSR) provides for a range of numerical and risk based environmental quality standards[19].

Numerical standards for substances in soil fall into one of three types; generic (CSR schedule 4), matrix (CSR schedule 5) or site specific. For water, CSR schedule 6 provides standards keyed to 4 water uses: aquatic life, irrigation, livestock watering and drinking water.

The regulation's risk based standards for human health protection are based either on prior consultation with the Medical Health Officer/Community for the site or on pre-approved default levels of acceptable toxicological hazard (non-carcinogens) or incremental lifetime cancer risk (carcinogens).[20]

The CSR standards and the protocols used to derive the standards have been, and continue to be, subject to extensive scientific peer review by human and ecological health experts.

It is generally acknowledged by stakeholders that the regulation's standards ensure appropriate and effective protection of human and ecological health at remediated contaminated sites. In addition the derivation protocols are viewed as being both highly transparent and scientifically credible and defensible.

The regulation's standards provide considerable flexibility in remedial approach for proponents. It should also be noted that the regulation does not require remediation to standards unless ministry certification of compliance is requested and that the choice of remedial approach (numerical or risk based) and the corresponding standards to be used at any site, is at the sole discretion of the responsible person for the site.

For a synopsis on the methodologies used to establish the regulation's standards see Appendix II.

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[19] For the purposes of this brief, discussion of the Regulation's standards will be limited to the numerical and risk based standards. Within a broader context, components of the Regulation's various ancillary protocols, procedures, analytical methods, technical and administrative guidance could also be considered as standards.

[20] Note that the term risk based standards as applied in the regulation is a misnomer, since in reality both the numerical and risk based standards per se are derived using the risk based approach. A better descriptor for the regulation's risk based standards might be "acceptable risk" standards

DISCUSSION

CSR Standards – Fairness, consistency and degree of harmony with other jurisdictions

Fairness

All the standards of the regulation are grounded in science using the risk based approach as detailed in the various derivation protocols. The derivation protocols are based on common and universal science policy goals and decisions related to acceptable human and ecological health risks. With the exception of the drinking water standards, all the standards are strictly toxicological in nature and have not been adjusted or otherwise modified in any way. In consequence, the standards ensure a high degree of **fairness.**

For example, a soil standard developed under the Contaminated Sites Standards Taskgroup (CSST) protocol for any substance will reflect an equivalent and knowable level of acceptable risk[21]. As the protocols are strictly science based, the standards produced are impartial and non-discriminatory in nature. Every site is assessed and if necessary remediated using identical and non-biased standards reflective of an objective and identical acceptable risk. In addition, as the standards are purely toxicological in nature, they are essentially immune from political or economic motivated manipulation which could lead to unfairness in the derivation or application of standards for different responsible persons. This in turn translates into a high degree of certainty of process and assurance of equity for all parties involved in the site; the public, regulators, consultants, site owners, developers, financial lenders and other stakeholders.

Consistency

With the exception of the generic soil standards, the various types of numerical soil standards reflect a level of risk equivalent to that of the regulation's default human and ecological risk based standards. Consequently, the matrix, site specific (SSS) and risk based standards target a **consistent** and uniform level of risk and are derived using essentially identical risk based equations and toxicological assumptions. Only the assumed defined exposure scenarios and assumed receptor array varies within the different types of soil standards. This provides for a highly flexible suite of soil standards keyed to the site characterization knowledge base available for the site in question. As the extent of knowledge related to site specific conditions increases at a site, progressively more sophisticated standards with corresponding diminished inherent conservatism may be used (see Appendix III).

Similarly, the aquatic life, irrigation and livestock watering standards all target a consistent and uniform level of risk and are derived using risk based equations and toxicological assumptions. Even the drinking water guidelines are initially calculated to target a common and consistent level of acceptable risk.

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[21] The CSST was a joint Ministry of Environment and Ministry of Health *ad hoc* expert taskgroup which during 1994/95 developed risk-based protocols to ensure that standards derived for use under the then proposed CSR would be scientifically credible and defensible.

Harmony with other jurisdictions

The regulation's standards have been effectively **harmonized** with other jurisdiction's standards, principally those of the Canadian Council of Ministers of the Environment (CCME), to the extent sensible and practicable.

Common toxicological procedures and reference materials, for example toxicological reference doses (RfDs), cancer potency factors (CPFs), 20th percentile lethal concentrations (LC20s), 50th percentile effect concentrations (EC50s), are used by essentially all jurisdictions to develop risk based environmental quality standards. In addition, virtually identical principles related to exposure pathway and receptor characteristic considerations apply to all jurisdictions' risk based standards.

Jurisdiction's standards differ however, in regard to specific level(s) of acceptable risk, specific exposure and receptor assumptions and ultimate risk management goals and objectives. For this reason, differing standards exist between differing jurisdictions despite the use of common risk based derivational approaches.

All standards are the product of the underlying science policy decisions inherent to their development. Science policy necessarily differs from jurisdiction to jurisdiction. For example, Massachusetts and New Brunswick have adopted a common risk based corrective action (RBCA) process for use in contaminated site management. The RBCA process and standards only address human health concerns, ecological receptors are not directly considered. The Province and CCME on the other hand, in accordance with their respective mandates and resulting science policy, have developed standards to protect both human and ecological health.

The CCME has elected to provide a single inclusive soil quality guideline for each substance, although they publish a table of the various exposure/receptor values calculated under their protocol. Ultimately the guideline is set equal to the most stringent of the calculated values. In CCME's view the single guideline approach confers maximum environmental protection. The Province conversely, has rejected the single standard approach in favour of setting a matrix of multiple standards (CSR schedule 5) for each substance. In our view the matrix approach combines a high degree of environmental protection with maximal remedial flexibility.

Jurisdictions differ in regard to their respective levels of acceptable risk. In regard to carcinogen risk, the United States Environmental Protection Agency (US EPA), CCME and the United Nations World Health Organization generally ascribe to the level of 1 additional cancer incidence in 1,000,000 exposures (10^{-6}). Health Canada's official acceptable risk measure takes the form of a narrative rather than a numerical calculated risk level (i.e. risk should be reduced to as low a level as practically achievable). In practice this translates into an acceptable risk range (i.e. 10^{-7} to 10^{-3}). For purposes of producing Canadian Environmental Protection Act priority substance list assessment documents and CCME soil quality guidelines, Health Canada uses 10^{-6} as a default. For the CSR, the ministry on the advice of CSST, has incorporated a default acceptable risk of 10^{-5} but in addition allows through section 18 of the regulation acceptable risk for any site to be set by the Local Medical Health Officer for the site in consultation with the site's community. The CSR is also unique amongst North American jurisdictions in allowing acceptable risk to be set based on human biological metrics (e.g. blood lead or urinary arsenic concentrations).

Similar jurisdictional differences occur for ecological standards. The Province and CCME use identical data quality requirements and toxicological datasets for terrestrial invertebrate and plant receptor standards. However the two jurisdictions differ markedly in the level of ecological impact they are willing to tolerate at a remediated contaminated site for these types of receptors. Both jurisdictions follow a risk based weight of evidence approach to establishing their standards. Both jurisdictions have identical risk management goals and objectives relative to these receptors. The CCME's guidelines however, are established on a critical percentile approach (25th percentile - no effects range) for all data (lethal and non-lethal). The Province on the other hand first segregates out lethality and non-lethality effects data and then allows up to a LC20 or EC50 level of impact respectively, when establishing soil invertebrate and plant standards.

The critical point is that there are no "right or wrong" standards between jurisdictions, nor are one jurisdiction's standards "better or more appropriate" than any other jurisdiction's standard. Different jurisdictions standards simply differ, even if those standards are derived using an essentially identical risk based approach. The standards used by each jurisdiction reflect that jurisdiction's mandate, science policy and management objectives.

No single standard is appropriate for every jurisdiction. To the extent that it makes sense and can fulfill each jurisdiction's requirements, standards should be harmonized as has been done for the standards of the Contaminated Sites Regulation. However, blind harmonization of standards strictly for the sake of harmonization is replete with scientific, economic and political hazard.

As an example see Appendix IV, which provides a copy of a recent letter from the BC Laboratory Quality Assurance Advisory Committee (BCLQAAC)[22]. This letter points out that if the ministry were to harmonize (i.e. revoke) its current petroleum hydrocarbon analytical methods in favour of the recent methods developed in support of the CCME Canada Wide Standards for Petroleum Hydrocarbons, analytical precision and accuracy would be significantly reduced and costs to consumers would roughly double.

Opportunities for Improvement

Updating of standards

The derivation protocols for the various soil standards are based on common and universal CSST science policy goals and decisions related to acceptable human and ecological health risk. As toxicological human and ecological health data sufficient to meet the minimum data quality requirements specified in the protocols becomes available, matrix standards for substances for which only generic standards are currently available are derived. The ministry's objective is to eventually replace the generic standards of schedule 4 *in toto* with corresponding matrix standards in schedule 5.

As the ministry lacks sufficient funds to conduct the requisite toxicological studies, we are dependent on national, international and third party industry sponsored initiatives to provide the scientific data required to derive new soil standards. As a result, progress on developing new matrix standards has been relatively slow. Further, the Province has only minimal influence on

[22] BCLQAAC is a joint technical committee of ministry and private laboratory experts that provides advice and assistance to the ministry in regard to analytical methods used within the Province.

the priority of substances under CCME toxicological study and essentially no control on the substances selected by third parties. Thus the ministry can not effectively predict when and if any particular generic standard may be advanced to a matrix standard.

Omnibus updating of the standards has only recently occurred (i.e. as a component of the 2nd stage amendment). This updating resulted in massive changes to the regulation's schedules (e.g. approximately 180 changes in Schedule 6 alone). Rather than updating every 5 years, the ministry would like to update standards in a more reasonable and measured manner (e.g. smaller annual or biannual updates).

Acceptable risk issues

With the exception of the drinking water standards which reflect a variable range of acceptable risk, the soil and water standards of the regulation reflect standardized levels of acceptable risk. However, these levels differ between the two media. In the case of human health the soil standards are fixed at 10^{-5} while for water the drinking water standards vary from 10^{-7} to 10^{-3}. For ecological health the soil standards would allow up to an LC20 or EC50 level of impact, while the aquatic life water standards would allow zero impact.

These inconsistencies in acceptable risk should be reconciled. However, it is also recognized that resolving this issue will require considerable intra and inter agency co-operation, co-ordination and compromise.

Enhanced Training and Partnership

The science of toxicological risk based standard development continues to steadily advance. New initiatives such as stochastic modeling, improved understanding of bioavailability/bioaccessibility, toxicological reference dose assessment and bioassay technique, substance speciation toxicity, novel applications of decision analysis, etc. continue to evolve and grow at an ever increasing pace. As a result, the ministry must dedicate more resources to keep up with recent developments and acknowledge and profit from innovation in the science. All stakeholders must realize that the CSR's standards can not and must not be "set in stone once and for all time". To ensure the regulation's standards continue to improve, it is vital that ministry staff receive adequate and ongoing training in new scientific and technical developments and that existing advisory committees such as CSST, the Contaminated Sites Implementation Committee Standards Subcommittee and BCLQAAC continue to be supported.

Director's ability to correct standards

The regulation's standards are approved by Cabinet. This is both a strength and weakness of the standards. Cabinet approval confers a high degree of certainty and fairness for all users, as the standards can not be legally altered or changed without the prior assent of Cabinet. On the other hand, infrequently some standards have proven problematic in application (e.g. aquatic life standards for aluminium, iron and manganese). Where a standard can be shown to be erroneous (e.g. based on incorrect or out dated data) or unnecessary (e.g. due to widespread "background" contamination, etc.) the Director should be empowered to make urgently needed "interim adjustments" to Cabinet's standards. The Director's interim adjustments would either be confirmed or rejected by Cabinet during the next subsequent regulatory amendment cycle to the CSR. This would maintain the high level of certainty provided by Cabinet's standards while simultaneously allowing and legitimizing urgently needed interim correction of a standard which can be proven to be erroneous.

CONSIDERATIONS

1. The regulation's standards should continue to be:
   a. Science based (i.e. toxicological risk based),
   b. Consistent,
   c. Fair (i.e. immune from political or economic manipulation), and
   d. Harmonized with other jurisdictions (to the extent sensible and practicable).

2. The issue of inconsistent acceptable risk levels between soil and water standards should be reconciled. As this issue is fundamental to all ministry standards, it should be resolved at the ministry intra-departmental level.

3. Cabinet should be encouraged to provide to the Director the discretionary authority to act in their behalf to make urgently needed "interim adjustment" to a standard that can be shown to be erroneous.

4. The regulation's standards should be regularly updated with annual or biannual amendments to the regulation.

5. Ministry funding and staffing allocations for standard's development should be increased to ensure standards can be updated in a timely manner.

6. Ministry staff must be provided with adequate and ongoing professional development training. This is essential to ensure ongoing advances in the science associated with standard setting can be identified, considered and where appropriate incorporated.

7. Existing joint ministry and external expert partnership advisory committees for the regulation's standards must be maintained.

Other Issues

Comments on other issues and what is and what is not working are provided in the attached table (Appendix V).

Appendix I - Comments from Ministry of Attorney General

SUPPLEMENTARY SUBMISSIONS ON LIABILITY

TO THE MINISTER'S PANEL ON CONTAMINATED SITES REGULATION*

Introduction

1. Perhaps the most controversial aspect of the legislative/regulatory scheme set out in Part IV of the *Waste Management Act*[23] and the attendant *Contaminated Sites Regulation*[24] is the wide net of liability it creates for the cost of remediating contaminated sites. Following the recommendations of the Canadian Council of Ministers of the Environment[25] and the experience of American jurisdictions,[26] the legislation provides a comprehensive code defining the entities that may be named to remediation orders and whom may be sued in court for reasonably incurred cleanup expenses.

2. The legislation's object is to promote the voluntary and speedy cleanup of contaminated sites, with those who either controlled, or benefited from, the polluting activity, or who would obtain a windfall profit from the remediation to pay in preference to the taxpayer or non-polluting current owners. The liability principles of the legislation are designed to promote incentives for optimal remediation in the present and pollution reduction in the future, promote brownfield development, be fair to taxpayers and to industry and reduce transaction costs, although there is considerable controversy about its success in pursuing these objectives. Any consideration of changes to the current statutory scheme should take into consideration these sometimes competing objectives. There are competing interests at stake, and issues such as predictability,

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* These supplementary submissions on Liability Issues were developed with the assistance of counsel in the Ministry of Attorney General, Legal Services Branch. These comments are for discussion purposes, and do not necessarily represent the legal position of the provincial government, or the Attorney General.

[23] *Waste Management Act*, R.S.B.C. 1996, c. 482 (the "*Act*")

[24] *Contaminated Sites Regulation*, B.C. Reg. 375/96 (the "*Regulation*"). The *Act* and the *Regulation* will be collectively referred to as the "legislation."

[25] *Contaminated Site Liability Report: Recommended Principles for a Consistent Approach Across Canada* (Ottawa: CCME, 1993) [The CCME Report"].

[26] By far the most widely discussed is the federal *Comprehensive Environmental Response Compensation and Liability Act* 42 U.S.C. §§ 9601-9675 ("CERCLA"), also referred to as Superfund. There are also a wide variety of state statutes, mostly following the federal model, with some differences. The academic literature is surveyed in N. Vlavianos, "Creating Liability Regimes for the Clean-up of Environmental Damage: The Literature", 9 J.E.L.P. 145.

certainty and practicality, which are important in the context of a civil liability system, must be balanced with the interest of ensuring remediation of past contamination and reduction in contamination through current industrial practices in order to protect human health and the environment. The challenge is to fairly balance competing interests, while ensuring that the resultant scheme is fiscally responsible so that taxpayers do not pay an inordinate share of the costs of past pollution.

3. The legislation has already brought about important successes, including a settlement agreement to clean up Britannia Mine, the largest point source of metal pollution in North America. It is unlikely that this agreement, and remediation at other sites, would have been reached without the broad liability provisions of the legislation.

4. Liability under the legislation is concurrent with common law liability for the effects of contamination under the principles of strict liability, negligence, nuisance and other legal and equitable principles, and the effect of a certificate of compliance or approval in principle on civil liability is as yet untested. The legislation applies retroactively. The liability of responsible persons is "absolute", although various defences, some involving due diligence, are incorporated into the legislation. Liability is also generally joint and several, although a responsible person may qualify as a "minor contributor," enter into a "voluntary remediation agreement" with the manager or obtain "apportionment" in which case their liability is severed.

5. Each of these aspects of the liability scheme of the legislation is controversial. Questions have been raised about the impact of the legislation on British Columbia's competitiveness and ability to attract investment.[27] Some stakeholders recommend that responsibility be limited to those persons "causing" contamination, that retroactivity/retrospectivity be eliminated, that persons who "exercised reasonable care" be exempted from liability and that all liability under the legislation be several, rather than joint. These proposals would radically change the legislation, and would likely transfer a large share of liability for cleanup from the private sector to future taxpayers.

6. This panel has been directed to review all aspects of the legislation in light of experience so far, new era commitments and present-day fiscal and economic realities. This submission will discuss what principles are appropriate and relevant to liability options, given the government's

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[27] E.g., Business Council of British Columbia, *Submission on the Contaminated Sites Legislation* (Vancouver, BC: April, 1999) ["BC Business Council 1999 *Submission*], available at **http://wlapwww.gov.bc.ca/epd/epdpa/contam_sites/reports/ submission_bcbusinesscouncil.pdf**

overall policy objectives. The governing principles should be (1) creating the right incentives to get the private sector to reduce and remediate contamination and develop brownfields at the least cost consistent with society's priorities for risk reduction; (2) promoting consistency with the principles of substantive and procedural fairness embodied in our legal institutions, and (3) minimizing the proportion of transaction costs incurred by the parties and by the regulator on improving the health and environment of British Columbians.

Principles for Evaluating Liability Options

7. British Columbians care about the competitiveness of their economy and about their living standards. They also care about, and have become increasingly conscious of, risks to their health and to the environment posed by toxic chemicals in soil, groundwater, surface water and the food chain. Risks to human health and to animal and plant populations arguably transcend any economic evaluation, but there is no doubt that they represent economic values as well. Industries as diverse as tourism, film, fishing, agriculture and forestry all depend ultimately on healthy ecosystems. In addition to the costs of toxins remaining where they may ultimately become bioavailable, the economic benefits of remediation and brownfield development also should be considered.

Incentives

8. In response to widespread criticisms of the US federal legislation (CERCLA) on contaminated sites, the *Waste Management Act* directs that a manager engage in the weighing of costs and benefits when evaluating remediation options. For the purpose of considering options for liability rules, the panel is limited to the issue of who pays for remediation: the standard-setting and risk assessment processes will make the substantive tradeoffs between economic costs and risk reduction. However, the design of liability rules, by altering incentives, can have a significant impact on whether British Columbians are getting cost-effective remediation and environmentally-effective development.

9. The "polluter pays" principle was endorsed by the Organization for Economic Co-operation and Development (the "OECD") in the early 1970's. However, it could be said that a variation of the "polluter pays" concept has been promoted by economists since the time of A.C. Pigou at the beginning of the twentieth century as a way of getting the private sector to make

this balance more efficiently than any central planner can.[28]. A recent survey of the global environment in the *Economist* remarked that both industry and environmentalists are starting to see the benefits of "getting the prices right" through well-designed liability rules, tradeable emissions and green taxes.[29] Desirable liability rules will (a) encourage the socially optimal amount of activity that may contaminate land by making the costs of cleanup or, if that is impracticable of compensation of all those who may be damaged by failure to cleanup, part of the price of the product of that activity; (b) encourage those undertaking such activities to undertake the optimal amount of care to avoid contamination and (c) encourage development and remediation of brownfields when the economic and ecological benefits of doing so outweigh the costs. Liability rules that accomplish these objectives cannot be said to be damaging to BC's economy.

10. Consistent with the government's general policy direction, all other things being equal, it is more desirable that government create the incentives for the private sector to remediate, under its supervision, than for the government to tax individuals and businesses and then conduct remediation itself. The former option has the advantage of tapping into the greater capacity of the private sector to find innovative and flexible solutions, and maintains accountability by keeping the regulator and the remediator at arms length. Unlike the practice of the U.S. Environmental Protection Agency with its dedicated Superfund, the practice in British Columbia has been to leave remediation with the private sector as much as possible, and changes in liability rules that will render this more difficult should be considered with some caution.

Fairness

11. Efficiency, while desirable, needs to be constrained by fairness. This is true even if we restrict the scope of our vision to the economic effects of the legislation. It is the perception of unfairness that appears to be of greater concern to industry stakeholders than the amount of money involved in remediation.[30] On the other hand, any strategy aimed at increasing investment in the province by shifting the burden of cleanup to taxpayers, also raises questions

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[28] A. C. Pigou, *The Economics of Welfare, 4th ed.* (London: Macmillan, 1948) argued for taxes that would "internalize" the cost of negative externalities, of which pollution is the paradigmatic example. The insight that liability rules accomplish the same thing, in a more decentralized way, was developed in G. Calabresi. *The Cost of Accidents: A Legal and Economic Analysis* (New Haven: Yale University Press, 1970).

[29] "How many planets?" *The (London) Economist*, vol. 364, no. 8280 (July 6-12, 2002)

[30] BC Business Council 1999 *Submission*.

of fairness, and would have undesirable fiscal consequences on government expenditures. Any significant movement away from the "polluter pays" principle could be viewed as 'loosening' of environmental protection laws, contrary to some of Canada's international commitments. Further, it should be recalled that the "polluter pays" principle is embodied in laws governing liability for cleanup in the federal and state jurisdictions in the United States, and in European Union law.[31] While reasonable differences in liability rules are to be expected, a liability regime which shifts the cleanup costs from polluters to the government would run counter to those of many of our trading partners, and might even be considered an illicit subsidy. Given the globalization of business and investment, it could be argued that the harmonization of policies across jurisdictions, such as the application of the "polluter pays" principle, increasingly promotes and facilitates trade and investment.

12. While fairness is a crucial evaluative principle, it is also notoriously subjective, particularly when the issue is who should bear the burden when the most clearly culpable or responsible party is judgment proof. The government is committed to treating regulated businesses fairly, but it is also committed to avoiding the distorting effects and fiscal consequences of subsidies. Because of the danger of subjectivity, it is important to consider the liability provisions in the context of the approach of other jurisdictions, the treatment of contamination liability by the common law, and the treatment of present risk caused by past activity in other areas of law and policy. However, "fairness" as a criterion will necessarily import questions of political controversy and choice.

Transaction Costs

13. In addition to promoting appropriate incentives and being fair, any liability options should be considered in light of their ability to minimize transaction costs, defined as expenditures, not to investigate sites or design and implement remediation, but incurred in the process of assigning liability among the various parties involved in a site.[32] Clearly, some transaction costs are the inevitable consequence of the existence of competing interests and our social commitment to make decisions in accordance with natural justice and procedural fairness. From society's point of view, however, such expenditures are wasted. More subtly, the mere

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[31] Current European law and proposed developments in environmental liability are canvassed in European Commission, *White Paper on environmental liability* (9 February 2000), available at http://europa.eu.int/comm/environment/liability/ white_paper.htm

existence of high transaction costs has been identified by some economists as the principal reason that some solutions that are technically win-win are not arrived at.[33] It is important, however, to recognize the difficulties in quantifying transaction costs, and the danger of relying on anecdotal reports of particular examples of contentious litigation in the absence of controls for selection bias.

14. Liability rules can contribute to transaction costs, either by being uncertain, and therefore increasing the need for litigation to give answers to whether a party is liable, by creating an excessive number of parties, or by requiring factual inquiries that are expensive to conduct.

15. The government has emphasized its commitment to adopting a scientifically based, principled approach to environmental management that ensures sustainability, accountability and responsibility.[34] In the present context, sustainability requires that the risks imposed on future generations be part of the present-day decision-making calculus, while accountability and responsibility fit well with the objectives of ensuring appropriate incentives, fairness and the reduction in transaction costs. These criteria were also used by the External Review conducted by Professors Tollefson and Belevsky in 1996.[35]

Experience Since 1997

16. The 1996 External Review recommended that the liability regime established by the legislation be reviewed in light of experience in 3 years. Unfortunately, it is still early for definitive empirical results on the impact of the legislation on incentives and transaction costs. On-site toxic releases in British Columbia are substantially decreased from 1993, and compare well with other jurisdictions.[36] The annual number of contaminated sites finally remediated generally progressed during the 1990s.[37] Although these developments cannot be attributed

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[32] Lloyd S. Dixon, "The Transaction Costs Generated by Superfund's Liability Approach", in ed. R. L. Revesz & R.B. Stewart, *Analyzing Superfund: Economics, Science and Law* (Washington, D.C.: Resources for the Future, 1995) at pp. 171-2.

[33] Ronald Coase, "The Problem of Social Cost",3 *Journal of Law and Economics* 1-44.

[34] British Columbia, *A Platform for Prosperity: 12 Months of Action-New Era Promises Made and Kept* (May 30,2002) available at **http://www.gov.bc.ca/prem/down/ new_era_review_5.pdf?5401**

[35] C. Tollefson & D. Belevsky, *External Review of Remediation Liability Provisions: The* Waste Management Amendment Act, 1993 (July 31, 1996), found at **http://wlapwww.gov.bc.ca/epd/ epdpa/contam_sites/reports/external_review.html**

[36] Environment Canada, *National Pollution Release Inventory* Reports, available at **http:// www.ec.gc.ca/pdb/npri/npri_preinfo_e.cfm**

[37] Ministry of Environment, Lands and Parks, *Environmental Indicator: Toxic Contaminants in British Columbia* (Victoria, 2000), available at **http://wlapwww.gov.bc.ca/soerpt/15-toxic-techdoc.pdf.**

directly to the new legislation, many of the liability elements were already present in the predecessor *Act*, although less explicitly.

17. There does not seem to have been a litigation explosion arising out of the legislation, although it is possible that this is in part due to the difficulty the courts have had wrestling with the relationship between the manager's jurisdiction and their jurisdiction under s. 27 of the *Act*. The recently enacted *Waste Management Amendment Act, 2002*[38] has sought to clarify this.

18. The lack of judicial guidance since proclamation of the WMA may have impacted on the effectiveness of the regime so far. First, without judicial guidance, there is a great of uncertainty as to the accurate meaning and appropriate interpretation of many of the provisions. This creates uncertainty in the regime and as such, promotes litigation. This is a reality inherent in all new legislation, particularly when the issues are complex and the costs of liability can be very significant.

19. Second, of the cases that have been decided under the contaminated site provisions of the WMA, the majority have dealt with the pre-conditions for a cost recovery action and have resulted in two streams of divergent authority. Two of these cases are scheduled to be heard together in the Court of Appeal in the fall of 2002.[39] A decision by the Court of Appeal should provide significantly more certainty to legislative interpretation and would likely have the effect of reducing litigation.

20. If the WMA is significantly overhauled, many of the certainty gains resulting from existing administrative and judicial decisions may be lost. Indeed, the very fact that amendments have been proposed have created uncertainty as parties consider whether to risk that a new regime would be more favourable to their interests.

21. Even in the United States, with two decades of experience with CERCLA, measurements of transaction costs remain uncertain, and the Ministry is unable to find much empirical work on the effect on incentives. Measurements of transaction costs find that those

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[38] Bill 32, passed Third Reading May 6, 2002. Royal Assent on May 10, 2002.

[39] *No. 158 Seabright Holdings Ltd. et al.* v. *Imperial Oil Limited—Compagnie Petroliere Imperiale Ltee. et. al.* (unreported, September 24, 2001), 2001 BCSC 1330 and *Workshop Holdings Limited* v. *CAE Machinery Ltd. et al.* (unreported, October 24, 2001), 2001 BCSC 1470.

under CERCLA are roughly within the range of ordinary civil claims, and significantly less than toxic cases handled through the ordinary tort system.[40]

Liability under the Legislation and the Common Law

22. In determining an appropriate statutory liability scheme, it is important to examine the relationship between liability under the legislation and under the common law. The assumption that liability under the legislation is far more "onerous" and even "draconian" than under the common law is vastly oversimplified. At no time in our legal tradition has fault been central to liability for contamination (nor is it completely absent from the liability principles created by the legislation). Moreover, unlike the legislation, the common law does not necessarily protect defendants from being forced to pay for remediation to a pristine state, even if the costs of doing this far outweigh the benefits in risk reduction. If the scheme of the legislation is to obtain the desirable level of certainty and reduction of transaction costs, it must be integrated with the common law so that there is an effective way for parties to terminate all their liabilities at the same time and in the same process.

23. If improvements to certainty and finality are contemplated changes to the current scheme, it is suggested that if those contributing a fair share to remediation are able to shield themselves from, or at least limit, their liability under the WMA, they should also be able to shield themselves from common-law liability.[41] This would necessitate including compensation for property damage and economic loss as part of the statutory scheme; otherwise these issues would be left to be dealt with outside the statutory scheme. Such a reform might be desirable for a number of reasons and to a number of stakeholders.

24. The liability scheme of the legislation is complicated and detailed, a consequence of the desire to establish certainty by clearly specifying exemptions and inclusions, generally worked out in litigation in other jurisdictions and under predecessor legislation, and by the extensive consultation process between the time the *Act* obtained Third Reading in 1993, and the proclamation of the legislation in 1997. The common law relating to liability for toxic contamination is even more complex, ranging over the torts of strict liability, trespass, nuisance,

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[40] Studies by the RAND Institute showed transaction costs for asbestos litigation in the range of 50% of total defendant expenditures compared to an estimate of 23%-31% for CERCLA/Superfund: Dixon, *supra* note 10, p. 182.

[41] As proposed in the BC Business Council 1999 *Submission*.

negligence, the law of landlord and tenant, of vendor and purchaser. The legislation intersects with a number of issues arising out of common law, such as trust law, real property law, insolvency law, corporate law and public law – to name just a few.

25. The basic structure of liability under the *Act* involves three levels. Section 26.5 of the *Act* creates four categories of "responsible persons": owners, operators, transporters and producers. Each of these categories is defined in s. 26, the definition section for Part IV of the *Act*. These definitions defy convenient summary, but in each case "control", the "right of control of" and "responsibility for" the site, the contaminating activity, the disposal of and the production of the contaminating substance are the critical tests, rather than a test of causation.

26. If a person fits within one of the four categories, they can be exempted from liability if they can establish that they fit within one of the exemptions set out in s. 26.6 of the *Act* or in ss. 19-33 of the *Regulation*. In some cases, there are exceptions to the exemptions: of interest, a landowner who acquired land prior to its contamination is exempted, unless the landowner rented or leased the land to the party that caused the contamination and had a level of actual or imputed knowledge about the activity that caused the contamination.[42]

27. The common law governing liability for contamination is even more complicated, and it is beyond the scope of this submission to attempt a comprehensive summary. In the escape of contaminants from an operation on one property to another, the governing liability rules derive from the case of *Rylands* v. *Fletcher*,[43] which set out a rule of no-fault liability for damage caused by escapes from the non-natural use of land. Because the liability was no-fault, it can be visited against subsequent owners who had nothing to do with the original pollution. If the escape was ongoing, the subsequent property owner could also be enjoined for public nuisance.

28. Actual damage to human health or to animal and plant species owned by others is actionable if it could be shown to be caused by the contamination and if the party handling, treating or disposing of the contamination (or any other party) can be shown to be negligent. As already noted, these actions are highly expensive to prosecute and defend, but the

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[42] *Regulation*, s. 29.

[43] *Rylands* v. *Fletcher* (1966), L.R. 1 Ex. 265, 4 H. & C. 263, [1861-73] All E.R. Rep. 1 (Exch.), affirmed (1868), L.R. 3 H.L. 330, [1861-73] All E.R. Rep. 1 (H.L.). Whether lawful use of toxic chemicals in ordinary business a "natural user" has been a matter of controversy, but general tendency has been to impose strict liability, particularly for escapes of petroleum products: e.g., *Carmel Holding Ltd.* v. *Atkins*, [1977] 4 W.W.R. 655 (B.C.S.C) and cases discussed in ed. L. D. Rinaldi, *Remedies in Tort* (Toronto: Carswell: 2002 looseleaf ed.), Ch. 21.

development of the class action vehicle and improvements in scientific knowledge will likely make them increasingly common in the future. The cause of action would arise when the personal injury or property damage occurred, even if this was many decades after the activity that created the risk in the first place.

29. At one time, a subsequent property owner whose land was contaminated by activity prior to its ownership, causing a present but so far unrealized risk, would be confined to any contractual remedies against the vendor of the property. In 1995, the Supreme Court of Canada established that economic costs of abating a current health and safety risk are actionable in negligence[44]; whether the same is true of costs expended to reduce environmental risk is as yet untested.

30. One conclusion from this extremely brief review of common law liability is that fault has never been a precondition for liability for the effects of contamination in our legal system. Under *Rylands* v. *Fletcher* or under contractual causes of action between vendors and purchasers or lessors and lessees, fault is not an issue. Even in an action for negligence, the actual defendant is typically not the negligent individual, but an employer, or possibly a partner or joint venturer with the employer, whose no-fault liability is a result of the employer's control over the activity and right to the profits from it.

31. One result of the no-fault nature of the liability at common law is that the defendant may be liable for present risk, notwithstanding that the risk was unknown given the science of the day. Because a cause of action arises when the risk materializes, rather than when it is created, limitation statutes may not provide protection from old liabilities.

32. The 1996 External Review discussed the inadequacies of the common law from the point of view of environmental policy. Less commonly emphasized is the uncertainty the common law creates for industry. Changes in the common law are effectively retroactive, and occur through court action without any opportunity for consultation with stakeholders. The measure of damages at common law, unlike under the legislation, can be based on returning land to a "pristine" state, notwithstanding that a lesser level of cleanup creates no or a negligible level of risk.[45] Furthermore, because common law damages are compensatory, there is no requirement in the common-law that any damages awarded be applied to remediation. The

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[44] *Winnipeg Condominium Corporation No. 36* v. *Bird Construction Co.*, [1995] 1 S.C.R. 85

[45] *Tridan Developments Ltd. v. Shell Canada Products Ltd.* (2002), 57 O.R. (3d) 503 (Ont. C.A.)

plaintiff is compensated for the harm or damages suffered, but is under no obligation to ameliorate the environmental conditions with the financial compensation received.

33. The BC Business Council has proposed that voluntary remediation agreements (VRAs) and certificates of compliance under the legislation be "liability shields" from all future liability, unless the VRA or certificate was acquired fraudulently or a risk specifically addressed in the "shield" comes to pass. This option could be compared to the historic tradeoff in workers' compensation statutes of removing liability for tort actions that, while less likely to succeed, had greater potential damages, in return for industry funding of a comprehensive compensation scheme. Industry funding for a compensation scheme could be created to fund any potential future liabilities. It is inappropriate to put the fiscal risk on the regulator who approves the certificates of compliance. Limitation of civil liability is in principle separate from the issue of "reopening" when and if standards change, which it is beyond the scope of this submission to review. However, the issue of "reopening" does raise the spectre of who takes on the liability arising from the change in standards. Should it be attributed somehow to the original polluter, to those whom benefited from the initial remediation, or should the additional costs be attributed to the taxpayer? Are there alternative sources of funding available if liability is to be allocated to the regulator who had approved the remediation to the then current standards? When determining whether the original polluter should be required to re-remediate, consideration should be given to the extent they benefitted from doing the initial remediation to generic or risk standards, rather than to pristine levels.

34. The BC Business Council's proposal deserves serious consideration, as a means to reduce duplication of process and additional transactional expenses. If implemented, it would require some expansion of the ability of the legislation to provide compensation to affected adjacent landowners and other parties who have suffered measurable losses, something no decision maker under the legislation currently has.[46] This might be desirable in itself, both because compensation is sometimes a far more cost effective remedy than remediation, and because of the difficulties faced by impacted property owners in proceeding with court action.

35. Even if this option is not pursued, as long as concurrent liability continues, it is important to consider the legislation not in isolation, but in conjunction with the common law. For example, the effect of the granting of an Approval in Principle or a Certificate of Compliance on common law causes of action has not yet been considered by the courts, and could be clarified

legislatively. The courts have recently held that a manager cannot consider the settlement of civil claims in deciding whether to grant an Approval in Principle or Certificate of Compliance[47] under the current legislation. The legislation should therefore either expressly preserve civil causes of action whatever approvals have been given, or bring compensation to affected parties within its scope.

Joint-and-Several Liability

36. One of the most conceptually difficult, and practically important, issues arising out of multi-party liability is who pays for "orphan shares," i.e., that part of the liability properly attributable to a party that is judgment proof. By hypothesis, the most appropriate party is not available, so any solution is inherently unsatisfactory. Under a rule of joint-and-several liability, solvent defendants are liable to pay the whole of the damages, even if that exceeds their own allocation, and are left to take the risk if they are not able to recover from one of their co-defendants. Under "several" liability, each defendant pays the apportioned share, and the plaintiff is left with the unrecoverable loss.

37. Joint-and-several liability comes up in two contexts in the legislation: under a Remediation Order, all the parties named are jointly and severally liable to make sure that the Order is complied with, and any could be prosecuted if it is not. Under a cost recovery action, responsible persons are jointly-and-severally liable to anyone who has incurred the costs of remediation. If joint-and-several liability is abolished for Remediation Orders, some alternative source of funding must be found and budgeted for: options are general revenue or a special tax. If joint-and-several liability is abolished for cost recovery actions, remediators will have to pick up the orphan shares, whether they are responsible or not.

38. Currently, there are exceptions to the general rule of joint-and-several liability under the legislation. A "minor contributor" is only liable for an apportioned share of liability, at least in a cost recovery action.[48] A person entering into a voluntary remediation agreement with a manager is discharged from further liability under the *Act*, but not under common law.[49] Finally, s. 34 of the *Regulation* permits "apportionment of a share of liability" to one or more responsible

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[46] *Imperial Oil Limited* v. *Driedger*, 2002 BCSC 219

[47] *Imperial Oil Limited*, *supra*. note 20.

[48] *Act*, s. 27.3(3).

persons, which may mean that liability can be severed by a court or a manager if it is justified by available evidence. However, the effect of this provision has yet to be tested in court.

39. In British Columbia, the *Negligence Act* provides for joint-and-several liability in tort, unless the plaintiff is at fault, in which case the defendants' liability is several.[50]

40. The issue of joint-and-several liability in the civil law is currently being explored by the Ministry of Attorney General's Civil Justice Review Project, and has been central to numerous tort reform initiatives in the United States. It was explicitly flagged as an issue that should be revisited by the 1996 External Review. Under US legislation, liability is joint, unless the contamination and remediation solution in response to it are severable, a result that could be accomplished under the BC legislation through the use of apportionment under s. 34 of the *Regulation*. The BC Business Council has advocated abolishing joint-and-several liability under the legislation altogether.

41. In considering whether to retain joint and several liability, the policy objectives are significant: should cost allocation for remediation be proportionate to the degree of contribution to the contamination or should it relate to the benefit received? Should the non-polluting innocent landowner receive a windfall by having its land remediated at the cost of the polluting parties, particularly if the purchase price of the land was discounted because of its contaminated state? Should taxpayers or other "deep pocket" defendants have to pay an unproportional share of the remediation costs, even if their contribution to the contamination was minimal, when one or more of the polluters are insolvent?

42. The experience to date with the current provisions suggests that it is the risk of joint and several liability that brings parties to the table that might not otherwise be willing to participate in costs for remediation.

Incentives

43. The incentive effect of joint-and-several liability is the subject of a considerable, but inconclusive literature. It is not known whether joint-and-several liability systematically over-deters (causes more economic cost than is justified by the benefit in reduced risk) or under-deters, or whether strictly several liability would be superior. Effects on the availability of insurance have also been studied, but are also inconclusive.

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[49] *Act*, s. 27.4(2)

[50] *Negligence Act*, R.S.B.C. 1996, c. 333, ss. 1 & 4.

44. In any case where any responsible party cannot effectively be ordered to carry out remediation (i.e. insolvency), the absence of joint-and-several liability would likely have the effect of making the provincial government a remediator. In addition to the obvious fiscal consequences, this would reduce the accountability inherent in having the regulator and remediator at arms-length. Although there is precedent for including the provincial government on remediation orders when it is a responsible person, and the *Act* clearly contemplates this possibility, an arms-length approach may be easier to maintain when an agency other than the Ministry is the ordered party. Somewhat different considerations arise when the responsible person is responsible by virtue of knowingly purchasing contaminated property.[51] Responsibility in this case is based on a concern to prevent windfall profits, rather than on internalizing the costs of polluting activities. The countervailing incentive concern is that unknown liabilities may prevent brownfield development. As a result, there is a strong case for limiting any ordered liabilities of a subsequent purchaser to the difference between the purchase price and the value of the land in an unimproved but uncontaminated state, subject to adjustments for inflation. Where the subsequent purchaser has resold, the limit should be the subsequent purchaser's inflation-adjusted capital gain. Similar rules could be developed for secured creditors foreclosing on their security, etc.

45. On the other hand, where a post-contamination purchaser with actual or constructive knowledge of the contamination decides to remediate and develop in the absence of a risk justifying an order, there is some justification to take the position that the developer/remediator assumes the risk of orphan shares and that to impose those shares on other partially responsible parties might lead to development that is not cost-justified from a social perspective. This problem could be addressed by severing liability where one responsible person sued another under section 27(4), analogously to the current rule under the *Negligence Act*.

Transaction Costs

46. The literature on whether joint-and-several liability adds to transaction costs is also inconclusive.[52] From the Ministry's point of view, a generalized several liability rule would have the disadvantage of effectively requiring a full-scale investigation of all liability and

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[51] This does not include owners who are responsible persons by virtue of renting the land to the operator who engaged in the contaminating activity, the basis for whose liability is a broad application of the polluter pays principle.

apportionment issues before a remediation order could be issued, something *Beazer* indicated was unnecessary and undesirable given the need to bring about speedy remediation. Under the approach approved in *Beazer*, a manager satisfied that a remediation order is necessary can limit his or her inquiry to finding a group of responsible persons, including but not limited to the most substantial contributors, capable of financing remediation, and leaving it to them to pursue other parties and each other for a more finely tuned apportionment of the financial burden.

47. The *Beazer* approach has the merit of giving each forum (the manager and the court) the role it is better suited to. The manager can relatively quickly determine the most obvious responsible parties in those relatively rare cases where the risks and the absence of an alternative regulatory process justify an order; the courts can determine ultimate shares of liability. Where the "work now, litigate later" approach will cause real financial hardship, the manager should have the power to limit the impecunious party's financial contribution without prejudicing the future ability of a court in a cost recovery action to award either a greater or lesser share of liability against that party.

Fairness

48. A perfectly just answer to the problem of orphan shares is inherently elusive. Government needs to make a policy decision as to whether taxpayers, impacted property owners or responsible persons should bear this burden, recognizing the uncertain fiscal consequences to government if orphan shares are to be assigned to general revenue.

49. In principle, there is no reason that liability under s. 27 should be governed by different principles than those adopted for civil litigation. Pending the results of the civil justice review, the two systems would be harmonized by severing liability when one responsible person sued another for incurred costs of remediation. If the civil justice system adopts a threshold percentage system, such a system will mirror the provisions regarding minor contributor status, and the minor contributor provisions could be more specifically harmonized with the precise threshold system adopted. Joint and several liability with reallocation of orphan shares based on proportion of responsibility could also be adopted.

50. If, as recommended, joint-and-several liability is maintained for ordered remediation, it would be desirable to make the final allocation as neutral as possible between ordered and non-

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[52] Reviewed in the CERCLA context in L.A. Kornhauser & R. L. Revesz, "Evaluating the Effects of Alternative Superfund Liability Rules" in ed. R. L. Revesz & R. B. Stewart, *Analyzing Superfund*, supra. note 10 at p. 115ff.

ordered responsible parties. Therefore, the ordered parties ought to have the right to pursue other responsible persons both for their own shares of liability and for a *pro rata* portion of orphan shares.

Possible Recommendations

51. Liability should be severed if remediation/contamination can be found to be divisible, and each divisible portion should be considered separately to determine whether it warrants a remediation order.

52. Post-contamination purchasers of land who have not themselves added to the risk posed by contamination, or undertaken to indemnify another responsible party, should have their liability limited to the difference between the purchase price, and the value of the land in an uncontaminated state, subject to adjustments for inflation and improvements.

53. For the remediation order process, liability should continue to be joint and several for all parties other than minor contributors and post-contamination owners, both for fiscal reasons and to reduce the upfront transaction costs and regulatory demands of making a final allocation of responsibility prior to issuing an order.

54. With respect to cost recovery actions, the rules about severing liability should reflect those elsewhere in the civil justice system. At this time, this can be accomplished by severing liability if the plaintiff is a responsible person. In the future, the rules for section 27(4) can be altered to reflect the results of the civil justice reform project. However, this rule should be modified by permitting ordered parties to pursue other responsible parties for a proportionate share of orphan liability.

Retroactivity/Retrospectivity

55. One of the most controversial, although effective, aspects of the legislation is that it attributes liability for post-proclamation remediation on the basis of pre-proclamation activity.[53] Arguably, the use of the word "retroactive" in s. 27(1) of the *Act* is not necessary for this result: CERCLA was found to have this result without any express requirement of retroactivity (and,

[53] This feature is referred to as "retrospectivity." Although there are some conceptual distinctions between retrospectivity and retroactivity, explored in R. Sullivan, *Driedger on Construction of Statutes, 3d ed.* (Toronto: Butterworths, 1994) at p. 511, these subtleties are not central to the policy debate.

indeed, in the face of a constitutional prohibition on retroactive statutes in the United States)[54] and under the predecessor statute which did not expressly mention retroactivity.[55]

56. The B.C. Business Council has strongly advocated that no liability be attached to contaminating activity before April 1, 1997, the date of the implementation of the legislation. While it is difficult to quantify the effect of other changes to the liability structure of the legislation, there is no doubt that, if implemented, this recommendation would make the legislation irrelevant to the task of cleaning up the toxic legacy of twentieth century industrial activity. Liability for historic contaminating activity that causes a present risk to human health and the environment, and has led to incurring remediation costs after April 1, 1997 should continue and does not, properly considered, offend any of the reasons for the presumption against retroactivity.

Incentives

57. Placing all responsibility for historic contamination on current landowners can be expected to deter the purchase, remediation and redevelopment of brownfields. The imposition of retrospective liability will likely not have any appreciable effect on current care levels in potentially contaminating industries, although it will raise the cost of doing business for those with long histories in these industries, and therefore increase their prices and reduce activity levels.

Fairness

58. In theory, at least, retrospective liability would not affect current investment decisions, since it would not change the expected return on such decisions relative to the imposition of only prospective liability. However, a perception of unfairness, or that such liability will be a precedent for retroactive changes in the future, may have an effect on the perceived investment climate in British Columbia. It is worth noting, however, that retrospective liability has either been implemented or at least contemplated in most other comparable jurisdictions since the mid-1970s. Developments in the common law also have retroactive effect, without the opportunity for consultation with industry stakeholders. The critical question for principled public policy development is whether the perception of unfairness is justified in reference to objective yardsticks.

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[54] See United States v. Monsanto Co., 858 F. 2d 160 (4th Cir., 1988); *cert denied*, 490 U.S. 1106 (1989).

59. The basic presumption against retroactivity and retrospectivity arises out of the distortion of settled expectations when past transactions are governed by rules that did not exist at the time. The difficulty endemic to damage caused by the use of toxic substances is that the "transaction" can extend over many decades. Thus, a release of a persistent organic pollutant in 1965 can cause a present risk in 2000, which manifests itself in a cancer in 2010 or the decline of a threatened species in 2020. In a scenario of this nature, the common law would consider the "transaction" to have occurred only when the damage was done, and liability would be judged on the basis of rules in place at that time (i.e., in the example, by the rules of 2020).[56]

60. The object of the legislation is to encourage risk reduction before the undesirable consequence materializes. But the principle is the same. Present risk implies the possibility of a future harmful event. Thus, retrospective liability for the costs of reducing this present risk is not unjustifiably "retroactive."

61. In discussing the imposition of no-fault liability in the context of sexual abuse by employees, the Supreme Court of Canada has noted that it accords with our intuitions about corrective justice to require those who place a risk into the community (even for a socially beneficial purpose) to bear the costs if the risk causes damage to innocent persons.[57] More generally, if more abstractly, if A benefits to B's detriment, then justice *prima facie* requires A to compensate B.[58] It is not much of an extension of that principle to say that those who benefited (in the past) from the creation of a risk to human health or the environment have an obligation to contribute to the cost-justified mitigation of that risk.

62. The principle of "beneficiary pays"[59] has been recognized even by opponents of retrospectivity/retroactivity as a possible justification; however, they argue that society as a

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[55] *West Fraser Timber Co. v. British Columbia (Regional Waste Manager)*, [1988] B.C.J. No. 2127 (Q.L.), ("*West Fraser*")

[56] *Bera v. Marr* (1986), 1 B.C.L.R. (2d) 1 (C.A.)

[57] "The employer puts in the community an enterprise which carries with it certain risks. When those risks materialize and cause injury to a member of the public despite the employer's reasonable efforts, it is fair that the person or organization that creates the enterprise and hence the risk should bear the loss. This accords with the notion that it is right and just that the person who creates a risk bear the loss when the risk ripens into harm.": *Bazley* v. *Curry*, [1999] 2 S.C.R. 534 at para. 31.

[58] This is the basic principle of the law of restitution. See *Pettkus* v. *Becker*, [1980] 2 S.C.R. 834.

[59] The "beneficiary pays" principle is used in two distinct senses. In the first sense, it applies to those who benefited from the historic pollution, but who may not be properly characterized as "polluters." (e.g., landlords obtaining rents from contaminating activity on their land). In another sense, it refers to those who would benefit from the *cleanup*, and who arguably would obtain a windfall gain if they did not contribute to its costs (e.g., developers purchasing contaminated, but potentially commercially valuable land at a substantial discount).

whole (and not merely owners, operators, transporters and producers) benefited from the jobs, taxes, goods and services created by such activities in the past, and should therefore pay the bill now. One difficulty with this argument is that it contradicts our basic system of corporate governance: while employees, creditors and communities may receive both costs and benefits from enterprise activity, these amounts are fixed, rather than variable. It is shareholders who are the "residual claimants" of both the firm's profits and its losses, and the goal of public policy should be to ensure that these reflect as closely as possible marginal improvements and diminishments in overall social welfare. Secondly, the present fiscal reality means that most of these costs would be otherwise borne by current landowners, which itself raises fairness issues.

63. As noted earlier, no-fault liability for the costs of the escape of contamination has always been part of Canadian law: what has changed since the 1970s is scientific and public awareness of the risk and the creation of administrative structures to deal with them more efficiently than was possible historically for the courts. In a fundamental sense, the liability under the legislation is not "new": certainly, similar liability existed under predecessor statutes.

64. Moreover, unfairness may now result by removing liability for present risks created before April 1, 1997. Some form of retrospective liability has existed in BC for decades, and the existing *Act* has been on the table since 1993. Returning to the common law for pre-1997 actions would not only create substantial uncertainty, it would reverse the expectations of all those who purchased contaminated land since at least 1993.

Transaction Costs

65. If the legislation no longer applies to risks created prior to April 1, 1997, parties incurring remediation costs will likely have recourse to the common law. As described above, the common law remains somewhat uncertain, and the issues involved in its interface with the legislation are almost totally unexplored. Moreover, because of the complex factual inquiries required to prove causation and establish deviations from standards of care, "toxic tort" experience suggests transaction costs could be enormous.

Possible Recommendations

66. Post-April 1, 1997 remediation in response to present risks caused by historic contamination should continue to be governed by retroactive liability. However, the *Act* could be made clearer that it is not intended to apply retroactively to pre-April 1, 1997 remediation, or to risks that no longer existed as of April 1, 1997.

67. In addition, the legislation should try not to upset the intent of pre-1997 private contractual allocations of risk. The legislation should continue to direct courts, managers and allocation panels to give affect to agreements previously entered into between the responsible party and others which sought to allocate risk for activities on the site (e.g., contractual warranties, indemnities and insurance), and if the circumstances warrant it, to substitute the indemnifier for the polluter.

Causation and Fault v. Benefit Gained and Control of Activity as appropriate tests for allocation of liability

68. Should liability be restricted to those who directly caused contamination and are "at fault"? Or should it continue to apply to all those who exercised control over or directly benefited from the contaminating activity and to those who would gain a windfall profit if land they purchased in a contaminated state was remediated entirely at another party's expense?

69. Unlike the common law of tort, the legislation does not require that the responsible person "caused or contributed" to the contamination for liability to be established. It is somewhat misleading to refer to liability under the legislation as "absolute", since due diligence defences exist for owners and other defences exist for other categories of responsible persons; however, a party fitting within the definition of "responsible person" has no further defences available to it.

70. The BC Business Council has recommended that the *Act* be amended by deleting the current categories of responsible persons and replacing them with the single category of those persons who caused the contamination. The Business Council has also recommended that, in addition to a causation requirement, responsible persons be granted a "due diligence" defence to liability. These proposals mark a departure from the "broad net" philosophy of the CCME Report, and would increase the number of orphan sites (and, in conjunction with the comments concerning joint-and-several liability, the amount of "orphan share" liability).

<u>Incentives</u>

71. The literature on the economic effects of liability rules makes a distinction between optimizing "care levels" and optimizing "activity levels."[60] The first represents the investment an

[60] S. Shavell, *Economic Analysis of Accident Law* (Harvard University Pres, 1987)

industry or a firm makes in reducing risk, given a certain level of activity; the second represents the overall amount of production relative to other substitutes that may have different attendant risks. In the case of care levels, the goal of public policy should be to align incentives so that the marginal social cost of additional care or activity is exactly equal to the marginal benefits.

72. In general, the disadvantage of fault-based liability is that it fails to optimize activity levels. In addition, to the extent that innovation may bring about cost-justified improvements in care levels that would be invisible to the regulator or court charged with determining whether a firm has exercised "due diligence," fault-based liability will not create the right incentives to be environmentally innovative.

73. The BC Business Council has argued that the absence of a due diligence defence removes any incentive on a firm to use innovative solutions and the best commercially innovative technology.[61] This is contrary to the conclusions of most academic studies of this issue. A firm that knows it will face ultimate liability for cleanup costs has an incentive to find the best way of reducing the sum of investments in improved cleanup and present value of future liability. A due diligence defence in the context of cleanup liability (as opposed to the context of offences) has the potential to encourage companies to stick with already-approved "safe harbours" instead of innovative solutions that may be both more cost and environmentally effective. No fault liability for cleanup costs is consistent with the government's general policy direction toward results-based environmental management combined with greater discretion on the means employed by industry.

74. The argument in favour of basing liability primarily in control and related concepts such as right of control, responsibility for, etc. was set out succinctly by Mr. Justice Tysoe in *Beazer*:

> In general terms, it is my view that the intention of the Legislature was to include persons who made decisions or had the authority to make decisions with respect to any operation on the site. These are the persons who are potentially culpable because they were the ones who made or could have made decisions in relation to operations on the site, which may have included operations that caused or contributed to the contamination.[62]

75. The liability imposed on owners has two justifications, one different from the "polluter pays" principle, namely, avoiding a windfall profit to a subsequent purchaser who obtained contaminated property at a discounted price, and subsequently was able to have it remediated

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[61] BC Business Council 1999 *Submission*, *supra* note 5 at pp. 41-2.

entirely at the expense of those responsible for the historic contamination or the taxpayer, and the other similar when imposed on a landlord at the time of the contaminating activity, who could be expected to impose some control on the contaminating activity, and who benefited from it.[63]

76. Many stakeholders have raised the issue of whether this liability creates perverse incentives by discouraging the purchase and development of brownfield sites. The BC Business Council has recommended that purchasers of contaminated land be exempted from liability altogether, and has pointed to the example of Michigan where this reform appears to have led to increased brownfield development.

77. The Ministry agrees that brownfield development is environmentally and economically desirable. One option, which might have the advantages of the Michigan reform while retaining the "beneficiary pays" principle would be to establish an absolute cap on liability for post-contamination purchasers of the difference between the inflation-adjusted purchase price and the land's assessed value as unimproved but uncontaminated. In the case of post-contamination purchasers who have sold the land before remediation, the cap could be the inflation-adjusted capital gain on the land minus anything attributable to improvements. This cap would not be available for purchasers who voluntarily assumed liability for contamination or remediation as part of the purchase, or if activity during their tenure increased the risk posed by the contamination

Fairness

78. As noted above, the common law has long attributed no-fault liability for the effects of contamination.

Transaction Costs

79. Both causation and due diligence are expensive to prove and to disprove. Adding these elements to the liability structure of the legislation could not help but increase transaction costs. An American survey of transaction costs under CERCLA determined that, while unacceptably high, they were dwarfed by those involved in establishing toxic torts under product liability law that required demonstrating causation.

80. These requirements would also add to the likelihood of remediation orders being appealed, and possibly judicially reviewed. If managers had to make a finding that a person had

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[62] *Beazer, supra.* at para. 110.

caused contamination and had failed to act with due diligence before issuing a remediation order, such a finding would have enormous impact on the person's reputation and possible liability for environmental offences. It is difficult to see how a person could fail, in those circumstances, to take every possible legal step to challenge the manager's jurisdiction to issue the order. Under the existing legislation, a finding that an operator is a responsible person has no similar stigma, and no implications for "offence" liability.

Other Issues

A. Corporate Law Issues

81. Next to the now clarified issue of the court's jurisdiction under s. 27 to make findings of contamination and responsibility in the absence of a prior determination by a manager, the most heavily litigated liability issues so far under the legislation concern what might be called "corporate law" issues: liability of parent corporations,[64] of successor corporations under asset purchase agreements[65] or amalgamations[66] and of directors.[67] Perhaps because of the "transporter" and "producer" provisions of the *Act*, the issue of a franchisor's responsibility for the acts of a franchisee has not been litigated, despite its obvious importance in the petroleum industry.

82. If the central liability provisions of the *Act*, i.e. section 26.5 and the definitions of "owner", "operator", "producer" and "transporter" are altered, many of these issues will be opened up again. Rather than force these issues through litigation again, it is presumably desirable for government to confront the public policy issues involved. Similarly, if there is dissatisfaction with the results reached by the courts and/or the board, it may be better for the legislation to expressly address when the corporate veil should be disregarded, and when it should provide a defence.

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[63] CCME Document *supra* note 3

[64] *Beazer East Inc.* v. *Environmental Appeal Board et al.*, 2000 BCSC 1698

[65] R. H. Roberts, *Remediation Order OS-16149, Findings Regarding Responsible Persons Reason for Decision –II* (July 4, 2000), available at **http://wlapwww.gov.bc.ca/epd/epdpa/contam_sites/legal_decisions/orders/CanOxy/BCRFMCRPreasons5.html**, appeal to Environmental Appeal Board pending.

[66] *Beazer, supra*, note 32; *B.C. Hydro* v. *Environmental Appeal Board*, 2000 BCSC 638

[67] *Lawson v. Deputy Director of Waste Management* (September 19, 2001), 98-WAS-14(c) (B.C.E.A.B.) ["*Lawson*"]

83. The 1996 External Review speculated that British Columbians could reasonably expect transaction costs under the legislation to be less than under CERCLA because the legislation made explicit decisions about liability that CERCLA required the courts to grapple with. This speculation is bolstered by the subsequent 5 years of operation of the legislation, since almost all the ensuing litigation arose out of the corporate law issues the legislation failed to explicitly address.

84. For the most part, the decisions of the Board and the Courts on these issues have been consistent with the "broad net" approach recommended by the CCME. On the issue of parent corporation liability, the courts in British Columbia have departed from recent jurisprudence in the United States.[68] This is consistent with most sophisticated academic consideration of the appropriate liability rules for contamination: parent corporations have the legal right to control and are the ultimate beneficiaries of all the decisions of the subsidiary. Unlike individual shareholders, they do not suffer from a socially inefficient risk aversion that it is one of the objectives of limited liability to overcome.[69]

85. As mentioned before, the issue of franchisor liability has not been litigated. If, as proposed by the BC Business Council, there are modifications to the producer and transporter liability provisions, it may become necessary to address this issue explicitly. If "control" and/or "right of control" remain part of the test for operator and owner, but the position of franchisors is not explicitly addressed, there will likely be very costly and fact-intensive litigation to no sensible policy purpose, since there is no reason to reward franchisors who took a hands-off attitude or to penalize those actively involved in the management of their franchisees.

86. Professor Alan Sykes has extensively argued that franchisors in the petroleum industry have sufficient power over franchisees that they should be liable under the common law principles of vicarious liability.[70] It is clear that they typically have more expertise on spill risks and remediation methods than franchisees, and perhaps even regulators, and it is submitted that it is in the public interest for them to internalize the risk of franchisee error leading to site contamination.

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[68] United States v. Bestfoods, 118 S. Ct. 1876 (1998)

[69] *Note on Liability of Parent Corporations for Hazardous Waste Cleanup and Damages*, (1986) Harvard Law Review, Vol. 99: 986

[70] Alan O. Sykes, "The Economics of Vicarious Liability" 93 Yale L.J. 1231 (1984)

87. One corporation may obtain the assets of another through share purchase, asset purchase or merger. Typically, these transactions will involve consideration of which party will receive the historic liabilities (a contractual allocation of risk): providing the party so designated is able to meet these liabilities, there is little policy reason not to respect this choice. The justification for considering both parties to be responsible persons, with a full right of indemnity to the party that transferred its environmental liabilities, is that the risk of insolvency is more efficiently and fairly controlled by the transactors than by arms-length remediators or potential victims of human health and environmental risks.

88. The Board has held that directors and employees of corporations that are responsible persons are themselves automatically responsible persons.[71] The potential effect of this result is mitigated by the discretionary ability of managers not to add directors or employees on to orders, except in exceptional circumstances. In private cost recovery actions (but not in the order process), a director, etc. of a corporation or government body has a defence if he or she did not authorize, permit or acquiesce in the activity giving rise to liability.[72] Nonetheless, the result in *Lawson* will doubtless cause legitimate concern in the business community.

89. There are a number of options for narrowing the potential for personal liability of directors and managerial employees, ranging from extending the defence of non-authorization to the order process to limiting personal liability to circumstances where the individual acted outside the framework of any corporate form altogether or engaged in reckless or fraudulent conduct. The Ministry has found the possibility of individual liability useful in motivating compliance, but recognizes that some response to *Lawson* should be worked out with industry.

90. Particularly if there are significant changes to the existing language defining the categories of responsible persons (which would have the perhaps unintended effect of putting the existing jurisprudence in doubt), the option of setting out explicitly when related persons can be treated as one for the purposes of determining responsibility should be considered. This power could in some cases be discretionary, and could apply to individual shareholders, directors and officers in different circumstances than it would apply to corporations and government bodies.

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[71] *Lawson*

[72] Regulation, s. 35

B. Liability of Government Authorities

91 Clarification of the language governing liability for regulatory activity is desired.

92. When Bill 26 was introduced, all political parties agreed that municipal, provincial and federal governments should be treated in the same way as other parties. However translating this principle into law requires some exceptions, because government authorities engage in activities with no analogy in the private sector. The *Act* recognizes an exemption for government bodies involuntarily acquiring contaminated land,[73] for example through escheat or tax default and for operator liability arising out of "regulation with respect to the contaminated site".[74]

93. The statutory language in s. 26(3) of the *Act* leaves open the question of whether the limitation of the exemption to regulation "with respect to the contaminated site" was intended to encompass only regulation having to do with contamination, or was intended to apply to all regulatory activity. In addition, the provision is somewhat anomalous in only applying to the definition of "operator" and not to the other categories of responsible person. This is problematic because "owner" is defined broadly enough to potentially encompass a regulator acting on private land.

94. This submission recommends that section 26(3) of the *Act* be replaced with a blanket exemption from responsibility where the responsibility is due to the exercise of a public regulatory function. Where government acted on a commercial basis, or in some other way not unique to government, such as landowner, it should continue to be liable on the same basis as any other person. The distinction between regulatory and non-regulatory government decision-making is consistent with the basic principle of equitable treatment.

95. However, consideration should be given to creating an independent regulatory agency to ensure that the appropriate independence of the Province in its two roles is maintained.

C. Manager and Ministerial Powers

96. As mentioned above, the WMA and CSR would benefit from a review as to nature and extent of what the Manager and Minster's powers are. We would recommend that WLAP give consideration as to what powers it needs in order to effectively oversee whatever regime is instituted and to make submissions accordingly.

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[73] *Act*, s. 26.6(1)

D. Transitional Provisions

97. Any substantive changes to liability will have a significant impact on parties already in the process and consideration needs to be given to the appropriate transitional provisions.

E. Clarify Existing Provisions

a. Unless the government alters its fundamental policy approach to contaminated sites, the WMA and CSR regime would benefit from a review of the current drafting of some of the legislative provisions. While it is impossible to eliminate uncertainty in unconsidered legislative provisions, greater clarity of existing provisions is desirable. This submission has not focused on these sometimes technical issues in detail, but the Ministry may want to consider a drafting review after the general policy direction has been established.

Conclusion

99. The general direction of government policy is toward more reliance on incentives and evaluation of results than on central direction and toward funding of public services based on use. These directions are to some extent demanded by the increasingly limited resources government finds itself with, and to some extent based on a philosophical shift toward solutions based on decentralization and accountability. It is no secret that the resources for command-and-control style regulation, or for the direct provision of remediation, are limited and diminishing. It is also widely acknowledged by economists, environmentalists and industry that solutions based on internalizing social costs in private decision-making are the best option to address the environmental problems left to us by the twentieth century and facing us in the twenty first.

100. This submission suggests that the current liability principles of the legislation are broadly in accord with these policy directions. It has brought about concrete successes in the last five years, without an explosion of litigation. At the same time, there is room to reform – in

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[74] *Act*, s. 26(3)

addressing the interaction of the legislation and the common law, in clarifying the corporate relationships that will attract liability, in circumscribing the scope of joint-and-several liability, for example – that will increase certainty, reduce transaction costs and better align market incentives with environmental objectives. In taking on this agenda, the panel can help promote a prosperous, healthy and sustainable future for all British Columbians.

Appendix II - Synopsis of CSR Standards Derivation Methods

Soil Standards

Numerical Standards Derivation

The generic numerical standards were adopted from the Canadian Council of Ministers of the Environment (CCME) 1991 Interim Canadian Environmental Quality Criteria for Contaminated Sites. The CCME Criteria were in turn adopted from various Canadian and International jurisdiction's soil quality guidelines. The derivation methods used by the various jurisdictions to establish the guidelines upon which the generic standards are based are largely undocumented. For this reason these standards are considered to be "professional judgement" based as opposed to protocol derived standards. The lack of a complete documentary record mitigates to some degree the scientific credibility and defensibility of the generic standards. Critics of the generic standards do not dispute that the generic standards are protective of human and ecological health. Rather they argue that the generic standards may be overly stringent and conservative.

Matrix Standards Derivation

The matrix numerical standards have been derived in accordance with a detailed protocol reflecting science policy decisions and environmental management goals developed by the joint Ministry of Environment and Ministry of Health Contaminated Sites Standards Taskgroup (CSST). The CSST protocol was extensively peer reviewed by internal and external government, industry, academic and other stakeholder scientific experts. The derivation of the matrix standards has been fully and transparently documented. The matrix standards are irrefutably acknowledged to be scientifically credible and defensible.

Site Specific Standards Derivation

Site specific standards (SSS) can be derived on an as needed basis using a detailed protocol (CSR Protocol 2) established under section 53 of the Regulation. Protocol 2 allows *ad hoc* site specific standards to be calculated for a site by substituting information obtained for a specific site for the default values, assumed to be generally representative of all sites in the Province, that are normally used within the matrix derivation equations. SSS incorporate the greatest amount of site specific information available and thus represent the most appropriate and sophisticated type of numerical standards possible for use at any given specific site.

Risk based Standards Derivation

Risk based standards can take the form of acceptable biological metrics, or acceptable levels of toxicological hazard or risk. At any site, these standards may be developed *ad hoc* through the process described in CSR 18 involving the Local Medical Health Officer and community for the site. Alternatively, the pre-approved default levels of acceptable hazard or risk available in the regulation may be used. The risk based standards are strictly site specific in nature and require the performance of human and ecological health risk assessment for the site in question.

The default human health risk based standards were developed by CSST and have been ratified by Cabinet, the Provincial Medical Health Officer, the B.C. Local Medical Health Officer's Council and the Province's Occupational Health Officer's Council. Default ecological acceptable

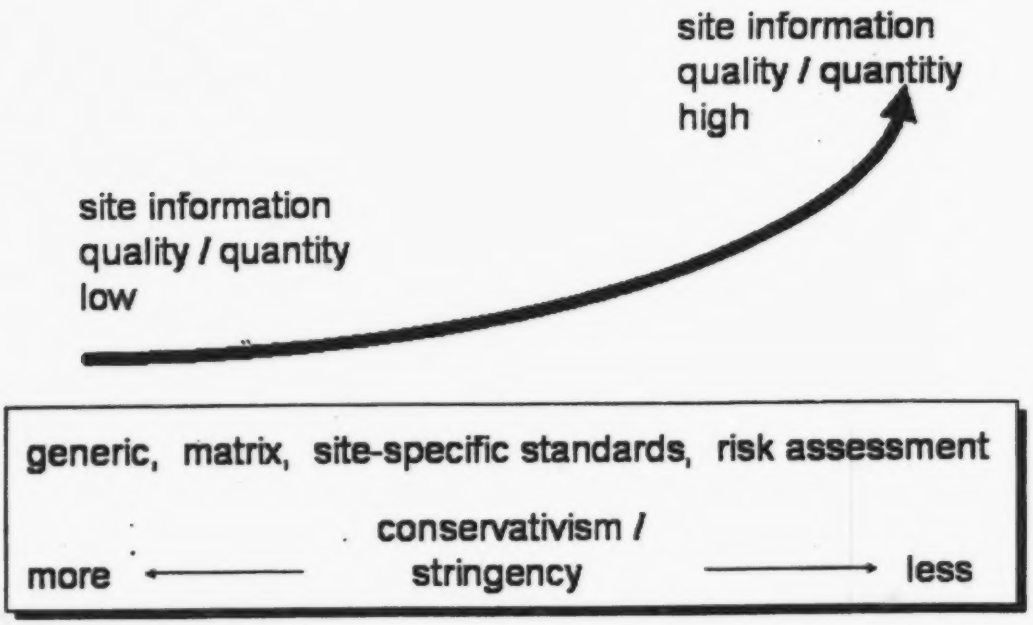
risk levels are documented in CSR Protocol 1 and were ratified at a ministry workshop on the ecological standards attended by Provincial, National and International Ecological experts.

Water Standards - Numerical Standards Derivation

The regulation's schedule 6 water quality standards have not been derived *de novo* for use in the CSR. Rather, in accordance with advice received from CSST and other stakeholders, existing Health Canada (drinking water), ministry or CCME (aquatic life, irrigation and livestock watering) water quality guidelines have been adopted as standards. Only the aquatic life guidelines have been modified for use in the regulation (i.e. standard = 10 x guideline, to allow for an assumed universally available dilution capacity in receiving water bodies).

Health Canada, ministry and CCME water quality guidelines are developed in accordance with well documented, consistent and scientifically credible and defensible protocols established by the respective agencies. Ministry and CCME guidelines follow an identical protocol in this respect that targets a "zero-order" level of acceptable ecological risk to aquatic receptors (i.e. targets the No Adverse Effect Level – NOAEL or Lowest Observable Adverse Effect Level - LOAEL). Health Canada's drinking water guidelines are initially toxicologically derived targeting a 10^{-6} level of acceptable risk. These preliminary guidelines are then adjusted *in camera* by the agency to account for socio-economic and technological feasibility considerations. As a result finalized Health Canada drinking water guidelines represent variable acceptable risk levels within the range of 10^{-7} to 10^{-3}.

Appendix III – Relationship between soil standards and extent of site-specific knowledge



Appendix IV – BCLQAAC Letter

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ENVIRONMENTAL MANAGEMENT

Glyn Fox,
Senior Risk Assessment Officer,
Ministry of Water, Land, and Air Protection,
Pollution Prevention and Remediation Branch,
Contaminated Sites Section,
PO Box 9342 Stn. Prov. Govt.
Victoria, BC, V8W 9M1

June 6, 2002

Dear Glyn Fox;

Re: Canada Wide Standards for Petroleum Hydrocarbons – Analytical Methods

The BCLQAAC Technical Subcommittee wishes to advise the BC Ministry of WLAP that in our opinion, the current British Columbia analytical methods for petroleum hydrocarbons (LEPH, HEPH, and VPH) should remain as the approved methods for use at contaminated sites under provincial jurisdiction in British Columbia.

We recognize and accept that the CCME Canada Wide Standard method for Petroleum Hydrocarbons (PHC's) will be required for management of contaminated sites under Federal or joint Federal/Provincial Jurisdiction.

Although the CCME Canada Wide Standard method for PHC's is in many ways similar to the BC methods, it is our opinion that the BC methods are more feasible in terms of reliability and economic viability while capable of providing results comparable to CCME method.

Specifically, the relative response requirements of the CCME method are extremely difficult to achieve on a regular basis, causing an unacceptable frequency of Quality Control failures, instrument maintenance, and re-analyses. This was a recurring complaint of numerous laboratories involved in the May/June 2002 CAEAL CWS PHC round robin study. Because of these and other issues, we estimate the analytical costs per sample for the CWS method to be approximately double the cost of the BC methods.

Should the Ministry decide to adopt the CCME methods for BC Contaminated Sites Remediation work, the higher analysis costs would of course translate to higher costs of site remediation.

An additional consideration is that BC's CSR guidelines contain criteria for petroleum hydrocarbons in waters. There are no CCME CWS methods for PHC in waters, and the CCME

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ANALYTICAL SERVICES

has no plans to develop any such methods. Even if the CCME PHC methods were adopted for soils and sediments, the BC hydrocarbon methods would still be required to support the water criteria.

The BC Methods for PHC analysis already provide equal or better protection to the environment than the CCME method, with the exception that heavy hydrocarbons beyond nC32 are not analyzed. Further harmonization between the methods can be achieved if this is perceived as beneficial. Specifically;

Carbon ranges of the BC methods could be modified to be consistent with the CWS method, with the exception of the heavy hydrocarbon fraction (i.e. C10-16, and C16-34, but not C34-50).

Oil and grease analysis could be used to quantify heavy hydrocarbon concentrations when GC chromatograms indicate they are present at a site.

- Reporting levels (detection limits) could be modified if necessary, although this may also result in some increase to analytical cost.

To summarize, we recommend that the BC LEPH, HEPH, and VPH methods remain the required methodologies for Contaminated Site Remediation work in BC. Should the deficiencies of the CCME CWS method for PHC's be addressed to our satisfaction in the future, we may reconsider our position on this issue.

Sincerely,

Tom Zhu,

Chair,
BCLQAAC Technical Sub-Committee

cc: Steve Horvath, Laboratory Services

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Appendix V – Other Issues